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The Economic Outlook, 1983

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*Unable to attend meeting of November 17, 1982

Guests at the Forum, November 17, 1982

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Report on the Conference Board Economic Forum

Albert T. Sommers

Meeting for its regular annual forecast of the economic outlook for the year ahead, The Conference Board Economic Forum has described prospects for a gradual but persistent recovery of business conditions beginning almost immediately, and continuing throughout 1983. The views of the Forum members are unusually widely dispersed. Many expect real growth during the year to be 2 percent or less; just as many expect it to be over 3 percent. Our generalist, dealing with the economic outlook as a whole, expects about 2 percent, even though he assumes (and urges) a very large further reduction in interest rates. Our average view for 1983 is for growth of about 2.7 percent. Our views for the inflation rate of 1983 show a much more definite central tendency, with a clear preponderance at somewhat below 5 percent. But we are nearly unanimous in expecting recovery to start in the immediate future; a majority expects that when all the analysis is done, a turn to expansion will be found to have occurred in late 1982, even though we do not expect any appreciable change in the level of output in the fourth quarter of 1982 itself.

The issue revealed by the Forum's meeting is not whether growth will occur; it is the rate of growth, which the members describe as falling substantially short of normal expectations for the first year of a business cycle expansion. We envision a growth rate of over 8 percent in personal consumption expenditures in current prices, which would suggest a real increase of about 3 percent. We expect a substantial increase in the level of residential building activity, amounting to over 30 percent, in current dollars, and producing a residential building rate, in current dollars, roughly $60 billion higher by the end of 1983 than the current rate. And we anticipate that a moderate amount of inventory rebuilding will add about $20 billion to dollar demands in 1983, relative to inventory demand in 1982. We also expect a continuance of substantial growth in defense, at about the rate prevailing in 1982.

Albert T. Sommers
Senior Vice President and Chief Economist
The Conference Board

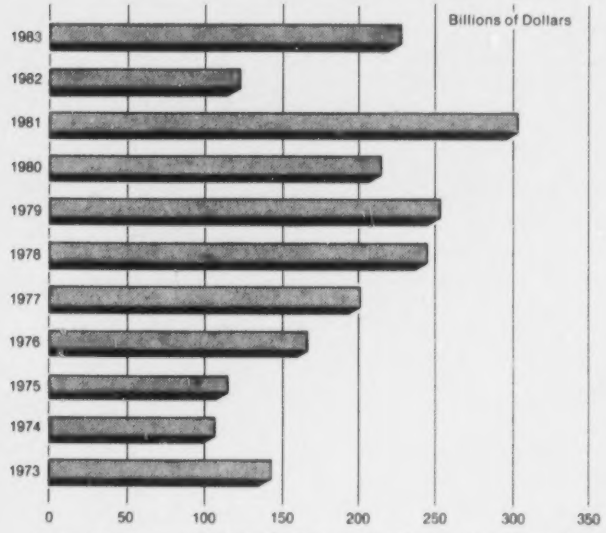
These strengths in our views of 1982 are, however, substantially offset by a major decline in the net export position of the U.S. economy, and by virtually no increase in the dollar outlay for plant and equipment expenditure, indicative of a significant continuation of the decline in real plant and equipment spending that began at the end of 1981. Moreover, we expect only a very small rise in dollar outlays of state and local governments, which again would suggest a decline in their real demand for output.

Finally, the real growth we envision leaves unemployment as a continuing pressing issue; our expectations for the year put the average rate only fractionally below 10 percent, and leave the rate at the end of the year at about 9.5 percent, no lower than the prevailing rate in the second quarter of 1982.

Our conservatism with respect to a year that would produce vigorous recovery, under normal cyclical conditions, with several quarterly growth rates far in excess of 5 percent, reflects deep concern over the monetary and fiscal bewilderments that surround us as the year is about to begin, as well as a deep concern over the impairments confronting all developed economies mired in the same worldwide recessionary condition. Our meeting produced no serious discussion of a further decline in U.S. output; no talk of worldwide depression; no expectation of near-term return to accelerating inflation. In the end, we have simply heavily qualified the cyclical prospects for a fast and highly stimulative resolution of the issues confronting policy. Our con-

The Conference Board's Economic Forum met on November 17, 1982 for its year-end examination of business and economic conditions in the year ahead. In an effort to provide you with the highlights of this important session as promptly as possible, the Board has prepared this concise report on the Forum's findings, including the summary by Albert T. Sommers, the Board's Chief Economist and Chairman of the Forum, and selected quotations from each of the participants. Data for 1983, appearing in the economic model and in the charts, reflect the collective judgment of the Forum, and are not necessarily identical with the views expressed by individual sector specialists.

Year-to-Year Dollar Changes in Gross National Product



Sources: U.S. Department of Commerce; The Conference Board Economic Forum (for year 1983).

servatism reflects uncertainty over the course of interest rates, which as a group, we consider to be still substantially too high in the light of the decline in the inflation rate; and over the prospects of achieving control over budgetary prospects in 1983 and ensuing years. The concerns that lead to this moderate forecast are not, generally, a sense of exhaustion of markets, or of past overextensions; they concern the resolution of policy dilemmas—interest rates, the budget, the dollar—and of the capacity of the rest of the developed world to respond with growth in their own markets in 1983. In many respects, these issues converge on the state of financial and capital markets, and their capacity to handle the immense public and private demands for funds that appear to lie ahead.

Expectations for Sectors

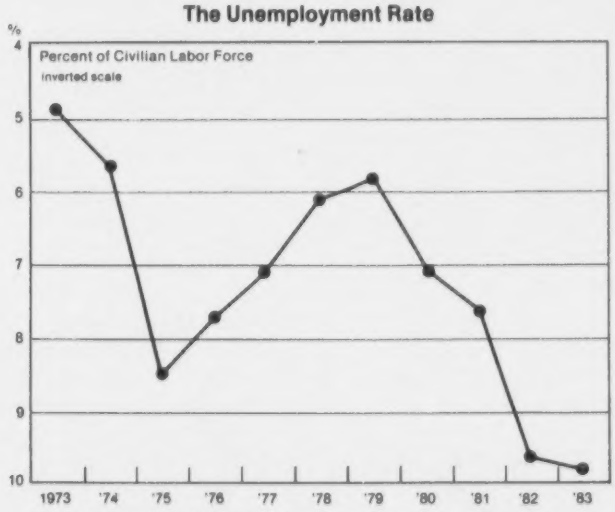
Our expectations for personal spending are a relatively strong component of the Forum's conclusions, with an increase in consumption in 1983 cyclically swollen beyond normal trend increase. Our specialist expects a rise in real spending at about a 3.5 percent annual rate, which would suggest an increase in dollar outlay of a little over 8 percent. The restraints on personal outlay in 1983 include a long pause in the growth of net worth in the personal sector, and cautious attitudes toward the future. Nevertheless, the coming gains in real income will affect long-run income expectations, and the stocks of durables in particular should resume their growth, assisted by the tax reduction due at midyear. The comments of our generalist on the outlook for personal consumption generally support these views, although he expects a slightly lesser growth of real income, and of real spending, and requires a considerable further decline in interest rates to support more aggressive resort to credit by consumers.

Our spokesman on the subject of business fixed investment envisions a rise in dollar outlay of 3.5 percent, which would equate with a decline of about 2.5 percent in the real rate of outlay. He confesses that this expectation is somewhat hopeful; it runs in the face of the absence of any current indicators of a recovery, a shrinking carryover of uncompleted projects, extreme conservatism in the views of business executives, and a probable modest decline in outlay for pollution control. Virtually every component of the capital goods industry remains in weak condition; what strength there is resides in the markets for communication equipment, electronics, instruments, and office furniture.

On the other hand, he notes that profits will be significantly higher in 1983, and borrowing costs lower. There is a substantial need to modernize the existing capital stock, particularly in light of the prospects for slower future growth in the labor force. The largest negative facing capital spending in 1983 is the low level of operating rates, which must rise 4 to 6 percent above current levels before any improvement in capital outlay can be expected. Once such improvement begins to appear, attitudes toward capital outlay will start to improve, but actual improvement in real spending should no longer be expected before the middle of 1983.

Our spokesman on the subject of business finance is even more conservative in his views on capital outlay. The outlook among producers of both capital goods and consumer goods is still deteriorating. The incoming order

The Unemployment Rate



Sources: U.S. Department of Labor; The Conference Board Economic Forum (for year 1983).

rate "leaves little room for optimism" on capital goods or corporate profits.

With respect to the housing industry, the Forum is virtually unanimous in expecting substantial improvement. Our specialist in housing looks toward an annual starts rate for 1983 as a whole of between 1.4 and 1.5 million. While this will still leave the housing industry far below the level of 2 million units achieved a decade ago, it will nevertheless mark a substantial resurgence. To reach the forecast annual level, starts must approach a 1.6 million annual rate by late 1983, an increase of over 50 percent from the estimated prevailing rate in the fourth quarter of 1982. Fulfilling this expectation will require a moderately favorable general economic environment, continued restraint in inflation, and a stable financial environment. The Garn-St. Germain legislation will contribute broadly to the strengthening of thrift institutions, and the appearance of nontraditional mortgage lenders in the mortgage-money market will contribute to the housing recovery.

As a group, the Forum expects a modest rebuilding of inventory in 1983—no cyclical explosion, but some recoupment of inventory levels as production and final demands increase. About $13 billion of inventory has been liquidated in the course of 1982; even modest, unspectacular return to accumulation, resulting from lower carrying costs and higher operating needs, would add as much as $20 billion to the total demands of 1983 relative to 1982. Because of its relationship to ongoing output, inventory accumulation should be expected to be greater in the second half than in the first half, lending some upward tendencies to the quarterly growth rates of output in that year.

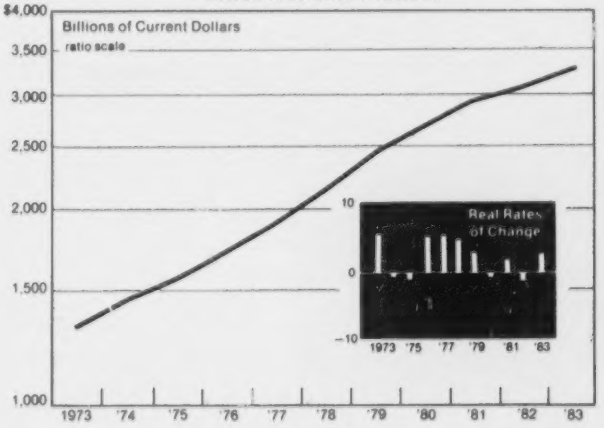
Our spokesman on the subject of the government sector expects that little can be done to control expenditures in calendar 1983, when the deficit will reach approximately 5 percent of GNP, even in the presence of real growth in private outlay. With respect to defense spending, the budget estimates appear actually to be below the emerging realities; significant cuts would be required to get to the basic Office of Management and Budget estimates of defense outlay on which the GNP estimate for this component must be based. The relatively rapid rate of defense outlay experienced in 1982 is thus likely to continue into 1983. Nor does our expert appear to expect any substantial deceleration of nondefense outlay within calendar 1983. Aggregate federal spending may add as much as $35 billion to aggregate demands in 1983.

Our discussion with respect to state and local outlays has focused on the serious financing problems confronting these governments in the presence of recession, and some decline in federal aid. Our expectations appear to be for a very slow rate of growth of dollar outlay, and, in fact, a mild continuation of the decline in real outlay that has affected this sector sporadically since early 1981.

Finally, our expert on the international outlook has produced a climactic description of a general subsidence in the U.S. export position. He notes that the decline in our export position has been among the largest factors in the decline of total U.S. output during the recession—larger than the decline in housing itself. The customary improvement in the trade balance that normally occurs in the course of recession has undergone a vicious reversal this time around. The explanation rests largely on a "massive overvaluation" of the dollar's exchange value, which has seriously eroded the U.S. competitive position in world markets. Our spokesman places the overvaluation at about 20 percent, persisting for over a year. These conditions have already impaired our trade results, but continued impairment, at as much as a $40-billion annual rate, appears to lie ahead. In terms of annual averages, our trade relations with the rest of the world, as expressed in the "net exports" component of gross national product, may experience a decline of over $35 billion, in current prices.

A summary of the consequences of these sector forecasts appears on page 6. Modification of the views of the individual sector specialists has been made, in the light of the views of other members of the Forum, and also in order to reconcile the sectoral estimates with our expectations for aggregate economic activity, as drawn from our traditional poll. The results reveal substantial prospective strength in residential building and in defense; moderate strength in outlays for consumer durables, and in personal consumption as a whole; substantial continuing weakness in plant and equipment spending, at least until midyear, and in the outlays of state and local governments, apparently throughout the year; and a vicious reversal into deficit in our merchandise trade balance, and in our net export account as a whole. In aggregate, the total volume of business, the gross national product, in current dollars—should in-

Gross National Product



Sources: U.S. Department of Commerce; The Conference Board Economic Forum (for year 1983)

Table 1: GNP Model by Sector, 1981-1983
(Billions of Dollars)

		1981	1982	1983	Percent Changes 1982/1981	Percent Changes 1983/1982
1	GROSS NATIONAL PRODUCT	$2,938	$3,060	$3,296	+ 4.2%	+ 7.7%
2	Personal Consumption Expenditures	1,843	1,969	2,130	+ 6.8	+ 8.2
3	Durables	235	239	263	+ 1.7	+ 10.0
4	Nondurables	734	763	815	+ 4.0	+ 6.8
5	Services	874	967	1,052	+ 10.6	+ 8.8
6	Gross Private Domestic Investment	472	430	487	— 8.9	+ 13.3
7	Residential	105	97	131	— 7.6	+ 35.1
8	Nonresidential	346	347	350	+ 0.3	+ 0.9
9	Change in Business Inventories	21	—14	6	...	...
10	Net Exports of Goods and Services	26	16	—11	...	...
11	Government Purchases of Goods and Services	597	645	690	+ 8.0	+ 7.0
12	Federal	229	256	289	+ 11.8	+ 12.9
13	National Defense	154	179	208	+ 16.2	+ 16.2
14	Nondefense	75	77	81	+ 2.7	+ 5.2
15	State and Local	368	389	401	+ 5.7	+ 3.1
16	PERSONAL INCOME	2,416	2,572	2,740	+ 6.5	+ 6.5
17	Personal Tax and Nontax Payments	387	396	394	+ 2.3	— 0.5
18	Disposable Personal Income	2,029	2,176	2,346	+ 7.2	+ 7.8
19	Interest and Transfers	56	61	62	+ 8.9	+ 1.6
20	Personal Saving	130	146	154	+ 12.3	+ 5.5
21	Saving Rate (%)	6.4%	6.7%	6.6%	...	...
22	CORPORATE PROFITS BEFORE TAX	232	176	213	— 24.1	+ 21.0
23	Inventory Profit	25	10	12	...	...
24	Capital Consumption Adjustment	17	9	0	...	...
25	Profits from Current Production	191	157	201	—17.8	+ 28.0
26	Corporate Tax Liability	81	57	70	—29.6	+ 22.8
27	Corporate Profits After Tax	151	119	143	—21.2	+ 20.2
28	Dividend Payments	65	70	73	+ 7.7	+ 4.3
29	Retained Earnings	86	49	70	—43.0	+ 42.9
30	PHYSICAL OUTPUT (GNP in 1972 $; SAAR)	1,503	1,477	1,517	— 1.7	+ 2.7
31	GENERAL PRICE INDEX (1972 = 100; SA)	195.51	207.24	217.29	+ 6.0	+ 4.8
32	UNEMPLOYMENT RATE (%; SA)	7.6%	9.7%	9.8%	...	...

Note: Components may not add to totals, owing to rounding.

Sources: U.S. Department of Commerce; projections for 1982 and 1983 by Forum participants, with some Conference Board interpolations.

crease 7.7 percent, which marks substantial improvement over the increase experienced in 1982. Our expectations are that corporate profits should increase substantially in the presence of this increase in the dollar volume of business—our specialist in plant and equipment spending suggests 25 percent, and our generalist expects about the same amount. This would be a marked recovery from the depressed earning levels of 1982, but would yield an aggregate profits figure, in dollars, not yet back to the level prevailing in 1981. Given our expectations for gross national product, the sharp increase in corporate earnings implies only a moderate increase in personal income. This, in turn, reflects a relatively low rate of wage increase; a lower increase in unemployment payments

and other transfers; and a lower rate of increase in interest income, offset by a cyclical uptrend in employment itself. The rise in consumption outlay in the model is faster than the rise in personal income, and the saving rate actually declines slightly, despite further tax reduction. The decline in the dollar volume of personal saving is, of course, offset by a sharp rise in corporate saving, in the form of retained earnings and rising depreciation. Characteristically for a year of business cycle recovery, the expenditure strength is in the consumer sector, while the fastest recovery of income is in the business sector, whose response in the form of capital outlay is deferred.

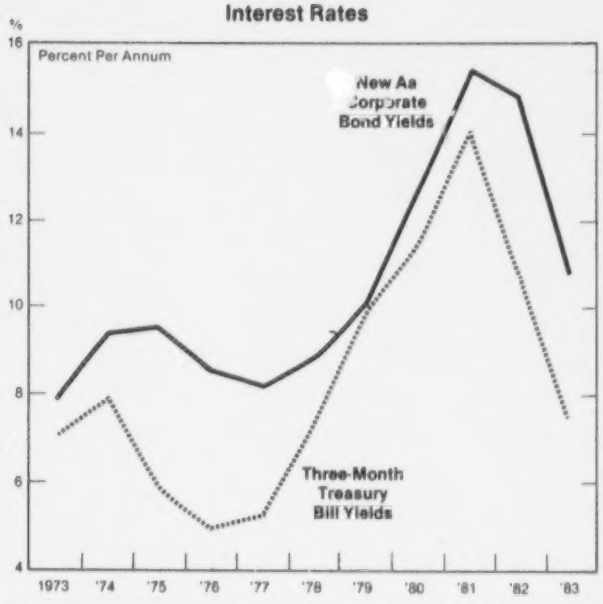
I turn now to our discussions of the general environment in which we expect this recovery to proceed, and our deep uncertainties with respect to so many of the policy variables involved.

Superseding all other issues influencing our views of 1983 are two front-and-center concerns in national economic policy: the course of interest rates, and the closely related subject of the cost of the federal deficit. Our views on these issues have shaped our views of a number of related issues: the prospects for inflation ahead; the inflation-unemployment trade-off; the high volatility of our financial markets; the prospects for reduction in the cost of capital; the behavior of the equity market in 1983; the behavior of the dollar and its effects on our export markets.

The probable course of Federal Reserve policy, and its reflection in interest rates, have dominated our policy discussions. Our generalist, whose own model is modestly below our consensus, requires a further substantial rate reduction, even up to a 500-point drop, to uncover the strength he needs to reach a 2 percent real growth rate in 1983. He points out that there has been no decline in real rates; inflation has fallen as fast as the rates themselves. The Federal Reserve should do "whatever is necessary" to arrive at a 9 percent prime rate within 1983, and a level lower than that by year-end. The existing increase in M_1 and M_2, if maintained, would suffice to achieve his own model, which calls for a 6.5 percent increase in nominal GNP.

Our monetary specialist is more cautious. He accepts the fact that the Federal Reserve has, for the time being, substantially reduced its commitment to the money-stock data. But he describes the Federal Reserve's attitude as "wait and see" and ascribes to it a natural reluctance to lower rates substantially in the presence of high growth in the money aggregates. He does not see an abandonment of monetarism; such an abandonment would carry a clear inflation danger. He does not think that long-term corporate bond yields will fall below 11 percent, a level perhaps 150 points lower than the prevailing rates. The decline in rates will have run its course before the end of 1983. The relationship of money growth to inflation is now a matter of "general agreement"; the Federal

Interest Rates



Sources: U.S. Department of the Treasury; Federal Reserve; The Conference Board Economic Forum (for year 1983).

Reserve cannot allow the aggregates to convey the impression of loss of control. His word for the Federal Reserve's behavior in 1983 is "pragmatic," not "accommodative." Our poll on these questions reveals an uneasy consensus, close to the description of our monetary specialist. At the end of 1983, our consensus is for a Treasury Bill rate between 7 percent and 8 percent; as a group, we expect it to be rising at the end of the year. For the Aa corporate bond yield at the end of 1983, we seem to expect between 10 percent and 11 percent. Our inflation expectations would thus produce a real interest rate of about 6 percent at the end of 1983—roughly double what is taken to be the historical norm.

Our capital markets specialist also retains a considerable degree of monetarist caution. The Federal Reserve has created an easier monetary environment, which markets have accepted with a "sigh of relief." Nevertheless, the Federal Reserve must be watching the growth of money with some concern; if the pace quickens, the Fed would get "nervous." The federal deficit still confronts the Federal Reserve with a formidable problem, and commodity markets will almost surely turn up as recovery begins. The demand for capital in 1983 will be very high; so will real rates. A heavy concentration of the participants in bond markets remember 1980, when yields turned rapidly upward to new peaks with business recovery from the brief recession early in that year. Our spokesman on the subject of business finance, who reports that the outlook for 1983 is still deteriorating among consumer and capital goods

industries alike, argues that the cost of capital is a dominant influence on new investment, and that the present level of long-term capital costs is constraining the demand for capital, and inducing reductions in capital requirements.

As a group, but with several of us dissenting, we seem to expect a Federal Reserve still constrained by the prospect of a revival of inflation operating in a financial market that still carries the fear of such a revival. It is evident from our discussions that the expectation that interest rates will not fall dramatically further limits our expectations for growth, and prevents us from forecasting a normally vigorous cyclical recovery.

Imbedded in our discussion of monetary policy is, inevitably, the prospect for federal budget deficits, and their claim on financial markets. Our fiscal specialist expects a deficit of between $170 billion and $180 billion for fiscal 1983; if growth should be very slow, a deficit of $200 billion, or nearly 6 percent of GNP, would eventuate. He argues that in typical cyclical recoveries, it is the decline of the budget deficit that provides incremental saving for private investment; this time around, the mechanism will not work in the first year of recovery. Moreover, prospects beyond fiscal 1983 still suggest deficits in the range of $140 billion to $190 billion, or perhaps 4 percent to 5 percent of GNP. All this, despite the fact that our expert expects some social security reform, adding revenues and somewhat reducing the rate of growth of outlays. He also expects that "the President's defense proposals will be subjected to much critical scrutiny"; and that tax actions outside the social security area are also possible.

In our poll questions relating to the fiscal and monetary position, our concerns for the future fix clearly on the level of interest rates in 1983, and the budget deficit beyond 1983. Virtually all of us argue that real interest rates have been a major source of our troubles, and virtually all of us would vote to "do more to lower interest rates." None of us would vote for the Federal Reserve to adopt a new monetary aggregate; fully half of us approve of continued attention to the existing aggregates. The urgencies here are for lower nominal and real interest rates.

With respect to the deficit, fewer than half of us feel that the fiscal 1983 deficit is too high, under the circumstances; we are unanimous in arguing that the deficits in later years are clearly too high. All of us would vote for close attention to the defense spending trajectory, and a large majority considers a gas tax desirable. All of us would vote for changing the entitlement indexing system; a large majority would hope for change in the social security retirement age; about half of us would hope for an increase in social security taxes. While no one argued it in explicit detail, our conversations reveal a close relationship between the trajectory of budget deficits beyond fiscal 1983, on the one hand, and the limitations of the Federal Reserve in seeking lower interest rates now. Continuing monetary stimulus now, fiscal restraint later, appears to be our prescription.

Our specialist in wages, prices, and productivity has stressed the immense impact of the recession itself on the inflation rate. While his own inflation forecast is well below our consensus, he argues that there has been no basic change in the inflation-unemployment trade-off; it is deep recession that has curbed inflation. In fact, if the inflation rate is measured as the so-called "core rate," removing such exotic elements as energy prices and mortgage interest rates, the deceleration in inflation is about the same, measured in percentage points, as the measured rise in the unemployment rate. The application of monetary policy to inflation has deeply depressed not just the business system itself; its impact in elevating the exchange value of the dollar accounts for the developing weakness in our trade position. The perverse impact of monetary constraints on the building of U.S. capital stock is such as to suggest that it will be very difficult to get the unemployment rate even below 7.5 percent; inadequate efficient capacity to accommodate growth of employment required to get the unemployment rate below that level in effect imposes a "capacity shortage" on our employment potential. His outlook for 1983 is heavily colored, apparently, by the costs imposed on the system by what he takes to be a fruitless war between monetary policy and inflation; no real or permanent results, and prolonged weakness in business conditions—prolonged, as he sees it, almost throughout 1983. What he refers to as "the basic conflict" between our inflation objectives and our unemployment objectives is still present in the system. There has been no "expectations breakthrough" that will relieve the conflict; while inflation will not become a significant problem for several years, it is mainly because there will be a major delay in general cyclical recovery. The suggestion in this material is that the equipment of U.S. economic policy, as it is presently equipped, does not possess the tools to fundamentally alter the U.S. Phillips Curve—its structural relationship between its rate of resource use on the one hand, and its inflation rate on the other.

Our international expert has pointed toward problems that run beyond U.S. economic performance in 1983. We are experiencing a downward spiral of world trade, and the outlook for the OECD, which in effect determines the level of world trade, is so poor as to suggest a continuing decline. Outside OECD, inevitable retrenchment in less-developed countries is also hurting the world economy. And there is a threat of repudiation of the enormous debts held by these countries, which would have substantial depressing effects on financial flows throughout the developed world. He reminds us that altogether apart from the U.S. outlook and U.S. economic policy, very large financial discomforts pervade the entire in-

ternational scene in the early 1980's, and may well inhibit growth prospects for the United States.

Our spokesman on the subject of the equity market argues that the enormous elevation of stock prices in the past several months reflects the judgment that the Federal Reserve has significantly altered its posture, "from one of fighting inflation, to one of encouraging recovery." The market has thus far interpreted this shift in position as reducing the likelihood of still deeper recession, or of a major financial accident. The market has also apparently accepted the conclusion that inflation itself will not be a problem in 1983—the conclusion emphatically supported by our specialist in wages and prices. The market is "confidently anticipating some recovery"; the magnitude of the recovery will, at least for a while, be much less significant than the assurance that it is beginning. The equity market, according to our specialist, is betting that policy will stay stimulative, and that it has the equipment to produce recovery without inflation—at least in 1983.

Finally, our resident sociologist describes a number of important issues confronting government in the year ahead. Confidence in the Reagan Administration remains moderately high at this point, but skepticism about its methods is increasing. The "pool of patience" is eroding, and threatens to give out, absent recovery in 1983. The "unfairness" issue is beginning to politicize the groups that have fared differently as inflation has subsided and unemployment has mounted; he sees the possibility of a resurrection of "class politics," as distinguished from the "interest group" politics of the past decade. His remarks seem to underscore a sense of urgency in policy—a need to unwind the "unfair" differential consequences of our now two-year effort to rid the system of inflation.

In conclusion, the Forum has uneasily described a return to growth in 1983. But the growth falls short of the historical rates achieved following past recessions. The performance of 1983 is hampered by temporary dislocations of policy, epitomized, perhaps, by still restrictively high real interest rates, and a federal budget trajectory that still limits the options open to monetary policy. The world in which we participate is full of its own problems, and will exert a considerable drag on our future, particularly as consequences of the prolonged elevation of the dollar work their way into our trade performance, all in a slack or shrinking environment of world trade as a whole. We do not doubt that the onset of a recovery of sorts is at hand; but for all of these reasons, our forecast reflects the judgment that it will be slow going for several quarters ahead.

The Business Outlook

Charles B. Reeder

Charles B. Reeder
Chief Economist
E.I. Du Pont de Nemours & Co., Inc.

Most of the current data on the actual performance of the economy indicate that the recession is continuing into the fourth quarter, but this has not dampened the case for recovery in 1983. The key factors that will generate the long-awaited recovery are (1) a further rise in real consumer purchasing power; (2) lower interest rates; and (3) an end to inventory liquidation. The first two represent a continuation of trends already under way, and the third is an almost automatic response to the first two.

Total consumer purchasing power has been remarkably well maintained during this recession as a result of reductions in personal income tax rates, the marked slowdown in inflation, and the increasing importance of nonwage income to consumers (interest income, social security benefits, and so on). Next year, transfer payments and interest income may not rise as much as this year, but employment should rise so that wage and salary disbursements, which account for 60 percent of total personal income, will increase more than this year. Additionally, personal income-tax rates will be reduced another 10 percent next July, and inflation should continue to slacken.

These factors will combine to produce an increase of more than 2.5 percent in total real disposable personal income next year and a roughly corresponding rise in real consumer spending. This year, real disposable income will be up 1.5 percent and real consumer spending only about 1 percent.

Interest rates have dropped sharply since midsummer and presently are at levels that have not been seen since

mid-1980. However, on an inflation-adjusted basis, interest rates are still near their historic peaks, and actually are no lower than they were at the beginning of the year because of the equally sharp decline in the inflation rate.

The primary cause of the recent plunge in interest rates was the announced willingness of the Federal Reserve Board to permit the money supply to grow above the upper limit established for this year, but that policy change took place in a climate of declining inflation, weak private demand for credit, and a rising personal saving rate. These latter conditions are expected to prevail in 1983, but their downward pull on interest rates could be canceled by a renewed tightening of credit by the Fed.

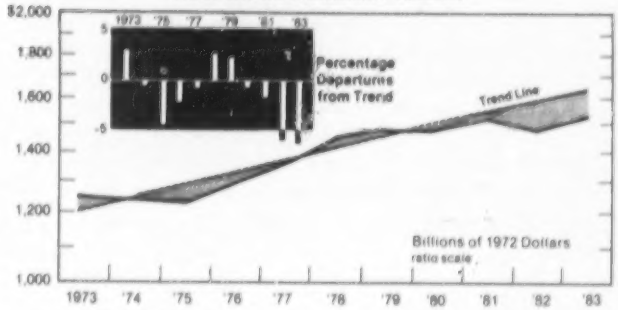
Some analysts expect the Fed to tighten credit again next Spring as the recovery gains momentum and they are, therefore, forecasting a renewed rise in interest rates. This could happen, of course, but in view of the many serious problems in the economy that are a direct consequence of high real-interest rates—reduced demand for housing and many consumer goods, faltering exports, soaring imports, high unemployment, widespread business failures, and so on—there is literally nothing to gain from an early return to tight money, and very much to lose.

Accordingly, the assumption here is that the Fed will not become restrictive again in 1983 and that interest rates will continue declining all year. These lower interest rates will have a very favorable effect on the demand for housing, autos, and many other big-ticket consumer items. Housing starts should rise by more than 20 percent next year, and sales of domestic new cars by more than 15 percent.

Business inventories have been trimmed significantly during the recession and are now so low that in some areas they could not adequately support a pickup in final demand. Since final demand is expected to rise in 1983, the inventory cycle must reverse. Just as inventory cutting this year caused the decline in production to be greater than the decline in final demand, efforts to rebuild stocks next year will require production to be boosted more than final demand. The turnaround in production should begin no later than January.

Despite these favorable prospects, the growth of total economic activity will be held down in 1983 by weakness

Real Gross National Product



Note: Trend line 1973 to 1981.
Sources: U.S. Department of Commerce; The Conference Board Forum (for year 1983).

in business capital spending and net exports. Real outlays for new plants and equipment are declining sharply now and this situation will continue through most of 1983, no matter how low interest rates fall. Part of the decline is linked to reduced investment in the energy area, and part reflects low capacity utilization rates for manufacturers. Several quarters of strong business activity will be required before a turnaround in capital spending can even be considered.

The nation's trade balance is being negatively affected by the recent sharp rise in the external value of the dollar, and the worst is still ahead inasmuch as the value of the dollar is now at its highest level since 1970. U.S. exports are certain to continue declining in 1983 and imports to continue rising, with the result that the nation's trade deficit will soar. This worsening trade situation will partially counteract the beneficial effect on production and employment coming from rising domestic demand and inventory rebuilding.

Summing up, there should be genuine economic recovery in 1983, but growth will not be broad-based and the percentage increase will be small in comparison with past recoveries. Real GNP should increase by about 2 percent and industrial production by 4 to 5 percent. Although the number of unemployed will decline, the unemployment rate is expected to average above 9 percent. However, with inflation and interest rates moving downward, the recovery should easily be sustainable beyond 1983.

The Government Sector

Rudolph G. Penner

Assuming a continuation of the policies implied by the Congressional Budget Resolution for fiscal 1983, and a fairly robust economic recovery starting very soon, I project a unified budget deficit in the $170 to $180 billion

range in fiscal 1983 and only very slightly below that level for fiscal 1984 and 1985. Relative to GNP, the projections imply a deficit equal to something slightly above 5 percent of the GNP in 1983, and between 4 and 5 percent of GNP in 1984 and 1985. A very slow recovery (less than 2 percent real growth 1983 over 1982) could imply a unified budget deficit in 1983 close to $200 billion.

The implied NIA deficits are huge. They are likely to be in the neighborhood of the entire amount of saving by individuals, leaving state and local saving, corporate saving, and foreign saving to finance whatever private capital formation occurs. During a recovery, significant reductions in the absolute size of the deficit are typically an important source of net saving to finance inventory accumulation and fixed capital formation. Unless policies are changed, that will not happen this time.

But, of course, policies will change. Social security reforms will add revenues and result in some reduction—perhaps small—in the rate of growth of outlays. It is becoming clear that the President's defense proposals will be subjected to much critical scrutiny. There may be tax actions outside of the social security area as well.

Rudolph G. Penner
Resident Scholar and Director
Tax Policy Studies
American Enterprise Institute

Nevertheless, it is hard to envision a set of legislative actions that would bring the unified deficit below $100 billion by fiscal 1985, unless we reinflate. This would leave a deficit in the range of 2.5 to 3 percent of GNP in that year even if a very healthy recovery is assumed. During the 1964-1981 period, deficits that high occurred only in 1968 (3 percent), 1975 (3.1 percent), and 1976 (4 percent).

The International Outlook

C. Fred Bergsten

The United States trade deficit will soar to between $75 billion and $100 billion in 1983 (in nominal dollars). This sharp further deterioration in our external sector will depress GNP by 1 to 2 percentage points. Between one and two million job opportunities will be lost as a result. Most forecasts fail to recognize the extent of these developments and thus substantially overstate both the recovery of GNP and the decline in unemployment.

Real net exports of goods and services (in 1972 dollars, as included in the real GNP calculations) have already fallen by $17.5 billion from the first quarter of 1981 through the third quarter of 1982. This decline equals about two-thirds of the total fall in real GNP over that period. This is a particularly startling development, because the U.S. trade balance has improved sharply during all previous postwar recessions.

Since early 1981, the massive overvaluation of the dollar in the exchange markets has severely undermined U.S. competitiveness in international trade. From its trough in late 1978, to its peaks of mid-1981, and again now, the dollar has risen by about 50 percent against the yen and DM and by a trade-weighted average of about 30 percent. Taking into account relative inflation rates and the excessive weakness of the dollar in late 1978, it can be estimated conservatively that the dollar has been overvalued by at least 20 percent for over a year in terms of

C. Fred Bergsten
Director
The Institute for International Economics

underlying economic relationships between the United States and its major foreign competitors.

Each loss of one percentage point in U.S. prices relative to our major competitors tends to reduce our trade balance by about $3 billion. We should thus expect a total trade deterioration of about $60 billion from the current overvaluation of the dollar, of which perhaps only one-third has already been experienced. Terms of trade changes will, of course, affect the nominal number, but such a swing could take the published merchandise deficit close to $100 billion (for at least a quarter or two, at an annual rate, if not for an entire year).

Such an outcome would push the current account deficit to between $40 billion and $50 billion (in nominal dollars), three times the previous annual record (in 1977-1978) and twice the previous quarterly peak (IIIQ 1978).

The bilateral U.S. merchandise deficit with Japan would range between $30 and $40 billion. Protectionist trade pressures, which throughout the postwar period have been propelled more by dollar overvaluation (late 1960's-early 1970's, mid-1970's, noq) than by any other single factor, would be greatly intensified.

At some point, this projected decline in the U.S. external account will come to dominate the exchange markets and the dollar will fall sharply. If that correction is delayed much longer, the deterioration in our trade balance will continue well into 1984, and the deficit will become even larger. On the other hand, significant dollar depreciation in 1983—which is more likely—will generate inflationary pressures on our economy. The U.S. economy may well face the worst of all worlds from the foreign sector in 1983 and into 1984: A substantial further drag on GNP and employment, and a new source of pressure for price increases.

The Social Situation

Daniel Yankelovich

Daniel Yankelovich
Chairman
Yankelovich, Skelly & White, Inc.

After returning from a recent trip to Europe, it seemed to me that U.S. consumers were a lot less hysterical and gloomy than people in England and Germany. In the United States, consumer response to the ailing economy is not a passive one, not a gloomy one. It is not really a political one either; people have not begun to politicize a lot of these issues. They still tend to see them in personal and economic terms and define for themselves the problem of how to get by in a situation that they see as difficult. There is a kind of psychic deflation that parallels the economic deflation. The feeling has been growing over the past couple of years that the problems we have were not created yesterday. And they are not going to be resolved right away. This is a much less impatient point of view than that reflected by the media.

The feeling about the President has been not only that he is well-liked, personally, but that there is more confidence in him because people consider him a person of principle. They agree with his objectives, although there has been a growing skepticism in the last few months about the methods for achieving those objectives. And there has been a growing feeling that his programs are unfair. Now the unfairness issue is going to become increasingly important. People are prepared to accept a certain amount of unfairness, for pragmatic reasons. But if the program works, the fact that it was unfair would be overlooked. If the program does not work, the fact that it is unfair suddenly looms large, and becomes a political fact of some importance.

About 60 percent of the public says that it expects the recession to go on either throughout 1983, or beyond. It has been more than a year or so now, but people have defined a year not as you might, but a year could be a four-month year, or it could be a 16-month year, depending upon the responses of political leadership and the press. I get the feeling that the pool of patience is beginning to erode, however. It showed up in the election and, I think, it is likely to give out next year. I think this would change the political situation quite a bit, and make the unfairness issue much more important. The unfairness issue is, perhaps, going to become one of the central issues in 1984.

The effects of inflation were not uniformly felt throughout the society during the 1970's. A lot of people were hurt, but a lot of other people either benefited, or were not affected. Subjectively seen, the way people themselves interpret it, you have about 26 percent over the last four or five years who consistently indicate rather significant distress. The distress indicator that we have been using is partly subjective, partly objective. It has to do with the difficulty people feel in paying their rent, their job security, and saving. But it is their own subjective interpretation. On the other hand, 31 percent feel that they are doing better than ever, and the rest are somewhere in the middle.

Throughout the period of redistribution of income in the 1970's, redistribution by virtue of inflation, you had a sense that those who were benefiting did not particularly deserve it from the point of view of any special virtue of working harder, or whatever, than those who suffered. The response of people who feel that they have been victimized is going to grow more political.

The Monetary Outlook

Norman Robertson

By midsummer, the prospect of a deepening recession evidently brought about a significant shift in Federal Reserve policy. Arguably, the Fed is now paying a lot more attention to economic and financial developments, and less to the monetary aggregates. After all, the economic recovery is long overdue, business failures are still on the rise, and the danger of an international financial collapse appears greater than at any time since World War II.

Evidence of a more accommodating monetary policy is visible in the recent interest rate declines, which have already carried most short- and long-term borrowing costs to their lowest level in some two years. The drop in market rates, as well as the 2 percentage point cut in the discount rate, has been interpreted as a sign that the Fed has discarded the targeting of M_1, at least until such time as the economic recovery is firmly in place. This perception of Fed policy has also been supported by the recent rapid advance of M_1 and the Fed's willingness to sharply accelerate the growth of nonborrowed reserves.

The temporary suspension of M_1 targeting does not mean that the Fed has now embarked on a sustained easing of monetary policy. On the contrary, policy is, for the moment, in something of a holding pattern. Over the four weeks ended November 3, 1982, M_1 climbed at a very rapid yearly rate of 27 percent, and yet the federal funds rate has remained stable in the 9.25 to 9.50 percent range. What this suggests is that the Fed is reluctant to restrict reserve availability at a time when the economy is still mired in recession and M_1 growth continues to be distorted by a variety of technical factors. It also suggests, however, that the well-above-target rate of M_1 expansion is inhibiting the Fed from additional moves designed to pull interest rates downward.

What can be said about monetary policy in 1983? Considering all that has happened in 1982, the Fed is very unlikely to follow a rigid or inflexible approach with respect to targeting money growth. Since the relationship between M_1, or indeed any other aggregate, and nominal GNP has become increasingly unreliable and unpredictable, I believe that the Fed will not only watch the monetary dials, but a broad array of economic and financial developments as well. Furthermore, the Fed might also adopt wider ranges for the aggregates; develop an improved measure of M_1; or explore the greater use of multiple, as opposed to single, measures of the money supply.

Norman Robertson
Senior Vice President and Chief Economist
Mellon Bank

A fourth quarter 1982 to fourth quarter 1983 rise of about 5.5 percent in M_1 should support a 10 percent rise in nominal GNP—including 5 percent real growth—always provided, of course, that the velocity of money stages its normal cyclical rise. Velocity, however, has become highly unpredictable, and the recent direction has been downward—the 2 percent decline in the year ending with the third quarter was the largest drop for any four-quarter period in at least 22 years. As matters now stand, anything less than a 4 to 5 percent increase in the turnover rate of money would necessitate a compensatory boost in the money supply to ensure a sustained recovery.

My own feeling is that the inability to accurately anticipate short-run movements in velocity will further encourage the Fed to take a more pragmatic approach to money-supply targeting, and thereby avoid another dangerous flirtation with monetary brinkmanship. A more accommodating policy, together with a generally subdued economic upswing and a low--5 percent—inflation rate suggests a further easing of interest rates through at least the first half of 1983. Money-market rates are seen falling to just under 8 percent, an 11 percent or slightly lower prime rate is expected, and the yield on Aa corporate bonds should settle in the neighborhood of 10.75 percent. Before the end of next year, however, the decline in rates will probably have run its course, and a firming trend can be expected in response to the quickening pace of business activity and the Treasury's enormous borrowing requirements. Finally, a return to single-digit long-term interest rates is, in my opinion, unlikely until such time as the ballooning federal budget deficit has been brought under effective control and investors are convinced that economic policy can successfully combine reasonable price stability along with strong gains in output. That time, I believe, is not even in sight.

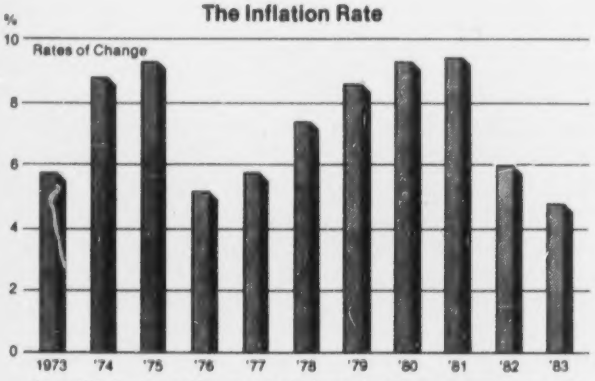
Wages, Prices, and Productivity

Barry Bosworth

Several years ago, there was a high degree of consensus as to the major problems that economic policy needed to address, even if there was none about the means for doing so. The major problems were: (1) the need to achieve a better balance between unemployment and inflation; and (2) addressing the problem of slow productivity growth with its implications for limited future gains in real income.

Despite the trauma of the last three years, I am surprised about how little has changed. We have traded a lower rate of inflation for higher unemployment, but the basic conflict between the two goals remains.

The decline in inflation has been faster than would have been anticipated three years ago, but only because government policy has tolerated a much more severe magnitude and duration of recession than most forecasters would have believed possible. The cost in terms of high unemployment has been quite in line with past recessions; and there has been no "expectations breakthrough" on inflation as the Administration argued in 1981.



Sources: U.S. Department of Commerce; The Conference Board Economic Forum (for year 1983).

Barry Bosworth
Senior Fellow
The Brookings Institution

About half of the 6 percent decline in inflation (from 12.5 to 6.5) as measured by the CPI, has been due to lower food and energy price increases. Domestic wage and price inflation has slowed by about 3 percent, to an annual rate near 6 percent. That is, the inflation rate dropped back to that of 1976-1977. The cost has been, in part, a rise of unemployment from 6 to 10 to 11 percent.

We have learned that monetary policy does have significant effects on inflation other than just operating through changes in aggregate demand. For example, the impact of interest rates on inventory stocks of commodities, and the impact of interest rates on exchange rates and import prices. Domestic price inflation seems a little high in 1982, given the deceleration in wage-rate increases and the fall in import prices. I do not think inflation will be a significant problem for several years to come, because I see little chance for a major economic recovery:

Unemployment should stay in the range of 9 to 10 percent for several years, because of the conflicts over economic policy. If there should be a strong recovery, however, there are likely to be significant capacity problems and bottlenecks in present markets at unemployment rates as high as 7 to 7.5 percent.

There is little evidence of any change in the productivity situation, with the growth trend apparently only about 1 to 1.5 percent. Recent fluctuations have been due mainly to the business cycle.

Behavior of the Personal Sector

Leif H. Olsen

Because the economy has not begun a clear and unmistakable recovery from recession, the small but persistent gains in constant dollar personal consumption expenditures have largely gone unnoticed. The pickup began in February and the level of personal consumption through October is above the third quarter average. The monthly increase between January and October has been about 3 percent on an average annual rate, far below what could be termed a cyclical rebound in consumer spending. But that rebound will surely take place in the

next three to six months. Whether one forecasts fiscal policy or monetary policy, the foundation for a recovery is now well in place.

Initially, the rebound in consumer spending could be strong—stronger than the moderate average increase that will subsequently occur over the longer run. It is not unusual to experience a much larger-than-trend increase in consumption and total GNP in the first or second quarter of recovery, as the velocity of money surges for a short time.

Taking a slightly longer view, the gains in real consumer outlays will be more moderate in this recovery than in past business cycle upturns. Consumer spending in the first 12 quarters of recovery will rise at a 3.5 percent annual rate, less than the pace set in the initial consumer recoveries from the 1969-1970 and 1973-1975 recessions. In those two upturns, real consumer outlays grew at 4.4 percent and 5 percent annual rates, respectively. The major components of consumption—durables, nondurables, and services—also will lag behind prior performance.

The recent acceleration in money has favorable implications for consumer spending. Individuals may soon find that their actual money balances are higher than they desire. They will run down this excess liquidity by making those long-deferred purchases of durable goods. The coming gains in real income will gradually be incorporated into long-run income expectations. The desired stock of durables will begin to rise—albeit slowly—yielding moderate gains in unit sales of autos, appliances, clothing, and so on. But a more moderate, long-term monetary policy than in past recoveries will keep the gains in real disposable personal income and consumption behind the pace set in prior cyclical rebounds.

The substantial acceleration in money growth since July should lead to high nominal and real income growth in the months ahead. The rise in both permanent and transitory income will be leveraged with higher credit usage to lift consumption of durable goods, in particular. Consumer credit outstanding as a percent of personal income has declined since 1979. Early gains in income growth will be incorporated into long-run expectations, but will only be a partial offset to the historic effects of declining real income growth on expectations.

Leif H. Olsen
Chairman
Economic Policy Committee
Citibank, N.A.

Further evidence of a damper on consumer spending in the early 1980s is the pause in the Federal Reserve's measures of household wealth in recent years. Household net worth of "ordinary individuals" increased by 4.6 percent per year from 1972 to 1978. In the three years since 1979, however, there has been no increase in net worth of this group—the longest period of no increase since the end of World War II.

Since we have had no experience in recent decades with such lengthy pauses in real net worth, it is difficult to determine how much this will retard consumer spending as the recovery in real disposable per capita income takes place. In the past, increases in net worth have accompanied increases in income and spending as consumers built up their holdings of household capital—autos, appliances, houses, home furnishings. That should occur again.

Capital Markets

Daniel S. Ahearn

The major rallies in the stock and bond markets reflected a collective sign of relief that the Federal Reserve policy has shifted away from restraint and toward active ease and lower interest rates. The markets believe that the current recession and Fed awareness of the vulnerability of the U.S. and world banking system to defaults on hundreds of billions of debt, has led to a

Daniel S. Ahearn
Partner
Thorndike, Doran, Paine
and Lewis

decision to provide lower interest rates and a more comfortable financial environment for hard-pressed debtors and the worried creditors holding their paper. In addition, substantial political pressures for lower interest rates are reflected in significant bipartisan support for a variety of new bills in the Congress aimed at encouraging the Fed to adopt interest-rate targets. All this had led many market participants to believe that the current accommodative monetary posture will persist for a long time.

There are a number of reasons why complacency about a sustained posture of monetary ease is unwarranted and why, therefore, the capital markets are unlikely to be one way streets to higher prices and lower yields. The large declines in interest rates since June are themselves powerful stimulants to consumer buying and to business activity, as is the big rise in money growth rates, and the hundreds of billions of value added to consumer and business balance sheets by the major increases in stock and bond prices. All this adds to the likelihood of economic recovery before long, and economic recovery would remove one of the pressures which has led the Fed to accept outsized money growth rates.

Second, International Monetary Fund (IMF) rescue packages are being provided for the major problem debtors: Mexico and Argentina, with Brazil next on the list, and many other smaller debtors. While such assistance is only a first step, it was essential to eliminate the rising concern about possible unmanageable default emergencies. There remain very large uncertainties, since only time will tell whether the populations of politically and socially volatile Third World and Eastern Bloc nations will accept many years of austerity and reduction of already low living standards to pay debt service to foreigners, or whether they will seek to change their governments. Nevertheless, the IMF credits and associated loans from central banks and commercial banks have eliminated the forebodings of imminent collapse that made a Federal Reserve policy switch to ease so important in early July. The monetary authorities therefore have now regained a little more freedom of action.

Third, the acceptance by the Fed of very high monetary growth rates has been rationalized by the maturity of All Savers' Certificates, which would artificially quicken the growth of M_1. While this is a plausible technical explanation, it is probably not the whole story, which almost certainly involves a real shift in policy related to the international debt problem and the sluggishness of the recovery. The Fed authorities will be watching the monetary growth rates closely to try to determine to what extent they also incorporate a genuine quickening, related to the sharp lowering of interest rates. From this perspective, the larger than expected 8 percent growth in October for the more inclusive M_2 aggregate (which is not inflated by All Savers' Certificates) in the midst of a very weak month for the economy is a worrisome sign. Should recovery begin strengthening the monetary aggregates, such a quickening would start from an extremely high 10 to 20 percent growth base. There is not much room for error here in an economy and a financial marketplace that still remember double digit inflation.

Fourth, the federal deficit is still a major problem, with deficits beyond $150 billion, and possibly beyond $200 billion, stretching out to the horizon. Financing the deficit this Summer and Fall has not been a problem, but only because the environment was one of recession, easing Federal Reserve policy, and a worldwide flight to high-quality U.S. Treasury obligations. It is hard to overestimate the influence of an easing Fed policy in the financial markets. The deficit is likely to be a strong force for higher interest rates in a nonrecessionary economy in which Fed policy is no longer easing.

Business Investment

Robert H. Vatter

Robert H. Vatter
Vice President and Economist
Metropolitan Life Insurance Co.

The outlook for business fixed investment in 1983 is rather bleak. The only debatable point appears to be how steep the decline will prove to be in real terms. I look for a rise of 3.5 percent in current dollars, which translates into a decline of 2.5 percent in real terms. The consensus forecast is not as "optimistic," and should my expectations for a 3.5 percent real GNP gain and a 5 percent rise in industrial output prove high, investment will obviously pan out lower.

The big negative for capital spending is low operating rates. They will have to rise 4 to 6 percent above current levels before manufacturing investment starts improving. That seems unlikely until the second half of next year.

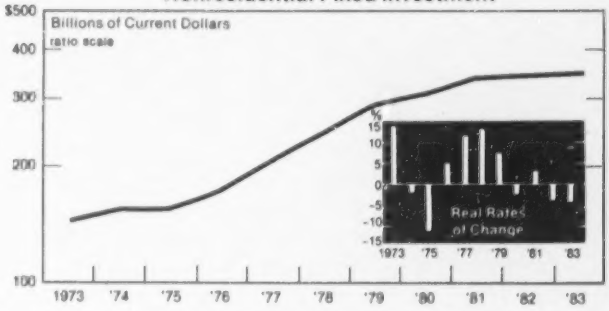
Carryover for manufacturers and utilities—that is, capital expenditures still to be made on projects already under way—also will not cushion the decline as much as during the mid-1970's.

Once recovery becomes more visible, business optimism will improve, and the typical pattern of upgrading spending plans will occur. Confidence will be helped by a sharp rise in 1983 profits, perhaps 20 percent or more. Aggressive cost cutting and work force reductions have positioned business for sharp earnings improvement when sales turn up.

Another positive development is the significant decline in borrowing costs. While the more dramatic part of the rate decline is behind us, some further moderate reductions for short rates through early Summer and for long rates through late 1983 seem likely.

Among producers' durable goods, farm equipment sales will be poor because of the distressed condition of agriculture and large supplies of used equipment available. Other weak areas include aircraft, and railroad, mining, and oil drilling equipment. Areas which should do reasonably well in 1982 are communications, electric transmission and distribution equipment, instruments, and other items associated with the high-technology and defense industries. Sales of office equipment and furniture should remain relatively strong,

Nonresidential Fixed Investment



Sources: U.S. Department of Commerce; The Conference Board Economic Forum (for year 1983).

as new space comes on stream and office automation continues.

Manufacturing plant construction will unquestionably be down in 1983. Office construction has been booming for five years, but with large supplies of space emerging and contract awards already down this year, it should taper off as 1983 progresses and remain weak into 1984. Petroleum construction, which represented 25 percent of nonresidential construction in 1982, also is slated to drop.

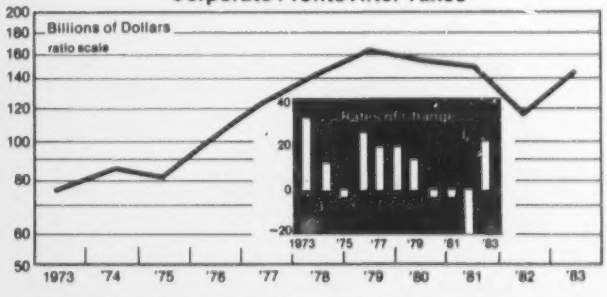
Business Finance

John T. Hackett

The business community, and particularly the manufacturing sector, is puzzled by the recent optimism in the equity markets. Among manufacturers of both consumer and capital goods, the outlook for 1983 is deteriorating. The incoming order rate, capacity utilization rates, inventory liquidation, and an absence of

John T. Hackett
Executive Vice President and
Chief Financial Officer
Cummins Engine Company, Inc.

Corporate Profits After Taxes



Sources: U.S. Department of Commerce; The Conference Board Economic Forum (for year 1983).

increases in consumer and capital spending, leave little room for optimism regarding corporate profits next year.

Many corporations, however, have taken advantage of the recent decline in interest rates and have issued long-term fixed rate debt to refinance short-term floating rate debt. In addition to improvements in corporate liquidity, there are widespread efforts to improve corporate cost structure by reducing break-even points and eliminating overhead expenses. Reductions in working capital requirements have also been realized through cooperative efforts between equipment manufacturers and their

component suppliers to improve inventory management. However, the full impact of improvements in operating costs is not expected to be visible until an economic recovery has been achieved.

Although corporate management may have difficulty understanding the rationale of the current stock market rally, it may not overlook the opportunity to further strengthen its balance sheets by issuance of additional common stock if equity prices continue to advance. Nevertheless, given the current state of the economy, corporate profit margins are not expected to improve significantly before 1984.

The Housing and Mortgage Financing Outlook

Saul B. Klaman

Saul B. Klaman
President
National Association of Mutual Savings Banks

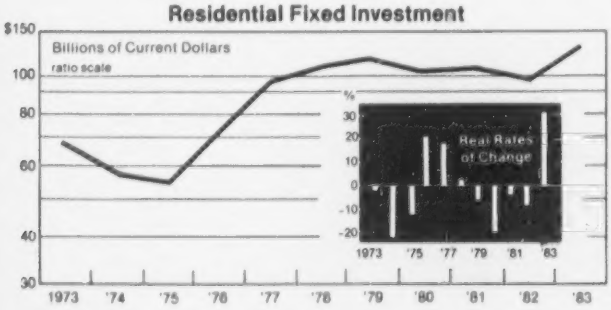
The housing industry, severely depressed for nearly three years, is poised for recovery in 1983. Indeed, housing sales and starts are already on the upswing in response to declining interest rates, stable to lower housing prices, and an unleashing of deferred demand.

The 1983 rebound will be limited, however, by continued high unemployment, continued lender emphasis on liquidity, and the lead time needed by builders to gear up for increased production. In short, 1983 will be a year of transition for housing, in which the foundation could be laid for a long-run sustained expansion.

From the abnormally low level of 1.1 million units in 1982, starts will increase to the 1.4 million to 1.5 million level in 1983. This gain will still leave housing activity well below the 2 million unit level first achieved more than a decade earlier, at a time when such a level was considered a minimum to meet America's housing needs.

Whether the foundation for sustained housing expansion will be laid in 1983 will depend almost entirely on the course of economic events. A continued sluggish stop-and-go economy, with much higher than usual unemployment, would clearly restrain potential housing demand. So also would an upturn in interest rates in response to economic recovery, reviving private credit demand, and a massive $150 billion to $200 billion federal budget deficit. Either environment would almost certainly rule out a sustained housing recovery. The essential foundations for a strong housing market are a relatively noninflationary economy, a stable financial environment, and a healthy thrift industry.

Residential Fixed Investment

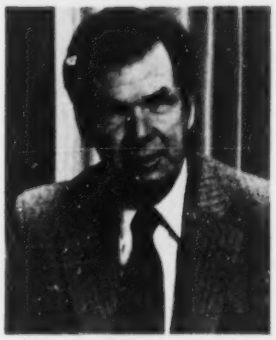


Sources: U.S. Department of Commerce; The Conference Board Economic Forum (for year 1983).

The landmark Garn-St. Germain Depository Institutions Act of 1982, signed into law on October 15, might well be the most important positive long-run development for housing and mortgage markets. Thrift institutions, the backbone of housing finance in the United States, have been provided with both short-run capital assistance and long-run balance sheet restructuring. Beginning on December 14, they will be offering a new, ceiling-free, money market deposit account likely to attract billions of dollars back from the money market funds. And in the years ahead, both savings banks and savings and loans—essentially united into one industry by this Act—will be broadening their asset and earnings base beyond the housing finance area. This will markedly reduce their vulnerability to interest rate volatility and greatly increase their ability to make mortgage loans in high interest rate periods.

The Equity Market

Robert G. Wade, Jr.



Robert G. Wade, Jr.
Chairman and President
BA Investment Management Corporation;
Executive Vice President
Bank of America NT&SA

The extraordinary rally in the stock market since August 12, 1982, is properly viewed as a response to lower interest rates, and serves to remind investors that the availability and cost of money is a primary ingredient of stock prices. However, this analysis stops far short of explaining the magnitude and violence, if you will, of the last three months' equity markets.

The decline in rates, particularly long rates, provided the market with the opportunity to believe that there will be some recovery. Prior to this decline, it was the view of many economists that no recovery was possible.

At the same time, the perception emerged that the Federal Reserve Board had significantly altered its posture from one of fighting inflation to one of encouraging recovery. This served to reduce sharply the likelihood of depression or major financial accident in the eyes of equity investors. The ability to describe in detail how the U.S. economy was sliding into depression had grown sharply during 1982.

An additional ingredient in the equation was the belief that, over the next year or so, inflation cannot be a problem. This attitude was necessary in order for bond rates to come down and stay down. In effect, the stock market believed that the inflationary expectations of the bond market had subsided and were unlikely to be aroused for a reasonable period of time.

It is important to remember that while the stock market has been advancing, interest rates have continued to decline so that the equity risk premium has only slowly been eroded. In other words, in spite of a sharp rise in equity prices, their relative attractiveness to bonds remained positive.

It is difficult for many people to understand why the stock market should be so bullish while the economic news remains so bad. It illustrates the ability of the market to discount and anticipate events; and, in this case, it is confidently anticipating some recovery. The stock market's record in this area is pretty good, but not infallible. At present, the magnitude of the recovery is not important, and most of the stock market's bets are being made away from those companies that are acutely sensitive to economic activity. The market so far has been increasing the multiple on companies whose earnings are thought to be fairly predictable and that are generally benefited by disinflation.

We would expect that, by early 1983, the magnitude of the recovery will become important as the market tries to anticipate earnings increases. In the meantime, the market has been fueled by the enormous amount of cash that has been left on the sidelines. As it starts to correct, this cash rushes in to buy, so each decline is brief. Barring some dramatic negative news, it is difficult to see much risk at present levels until this anxious cash has been invested.

Obviously the market cannot continue at this pace. We would expect a period of consolidation that could last several months. However, assuming that this recovery continues through 1983 into 1984, the stock market should be higher a year from now.

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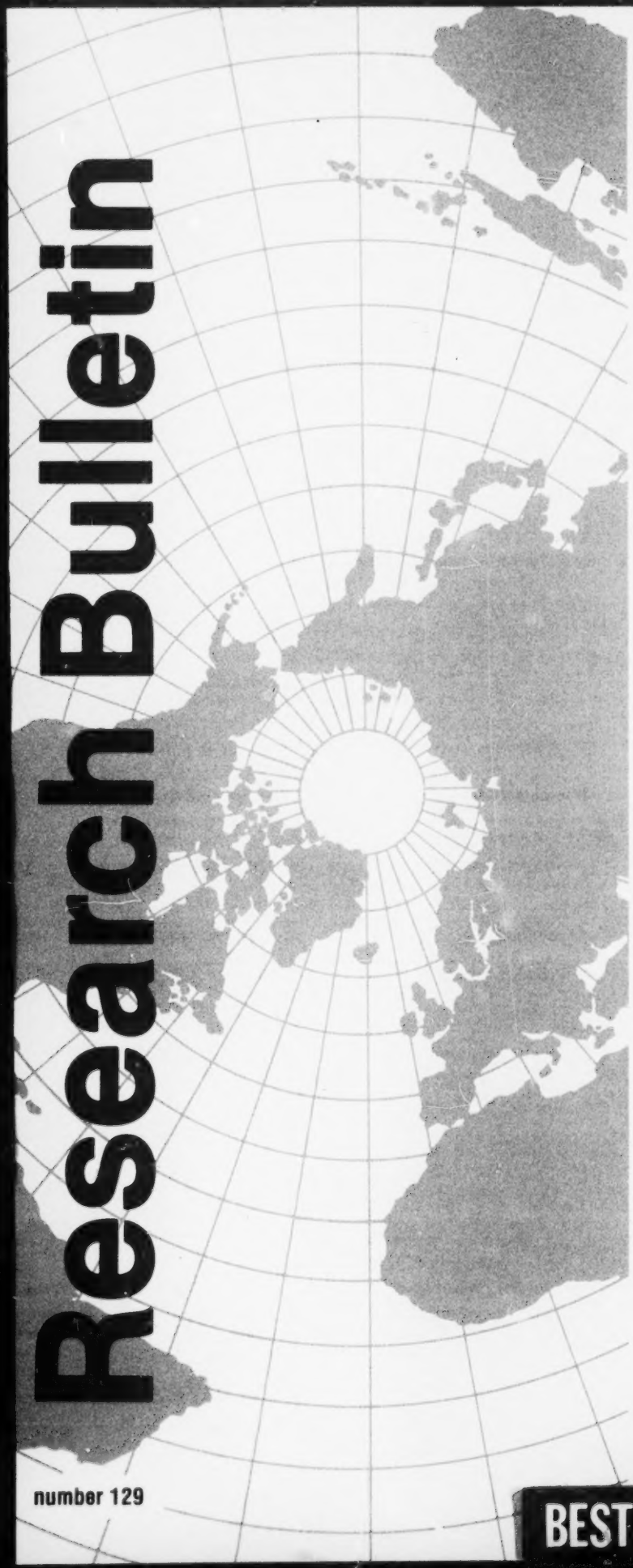

Research Bulletin

Technology Imports Into the United States

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The Conference Board

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Technology Imports Into the United States[1]

Introduction

Technology transfer has been the subject of numerous newspaper articles, academic studies, and government reports. Most of these see the transfer process as a river flowing from developed countries (the sellers of technology) to less-developed countries (the buyers). Rarely is the process viewed as tidal waters flowing in both directions at various times.

Technology transfer is more often considered an export than an import, and very little attention has been given in the United States to the import of technology. Indeed, a computer search of several bibliographic data banks that preceded this study turned up fewer than a handful of articles (other than short news reports) discussing, or even mentioning, the subject of technology imports into the United States. Yet, as the survey reponses for this study show, technology imports play a significant role in some U.S. companies. A recognition that technology transfer means imports as well as exports of technology for many U.S. companies is important to the development by both private and public sectors of sound policies governing the exchange of technology among countries and companies.

Aware of the limited information about technology imported into the United States, The Conference Board decided, in mid-1981, to follow up its earlier studies of technology and survey a number of U.S. manufacturing companies to ascertain their practices in importing and using foreign technology.[2] The survey and this report seek to answer two main questions for the respondent companies: What countries outside the United States are of major technical importance to U.S. companies? And,

[1]The Conference Board received partial financial assistance for the survey from the National Technical Information Service of the U.S. Department of Commerce and this financial aid is much appreciated.

[2]Earlier studies include: James R. Basche, Jr. and Michael G. Duerr, *International Transfer of Technology: A Worldwide Survey of Chief Executives.* The Conference Board, Report No. 671, 1975; and Daniel Creamer with the assistance of Anthony D. Apostolides and Selina L. Wang, *Overseas Research and Development by United States Multinationals, 1966-1975: Estimates of Expenditures and A Statistical Profile.* The Conference Board, Report No. 685, 1976.

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in what industrial sectors or product lines are foreign technological developments of interest to U.S. companies?

Most interested observers of foreign technological developments and their import into the United States by U.S. business will not be surprised by either the country names or the industrial sectors that appear most frequently in the answers from the survey participants. Among the countries are Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland and the United Kingdom; and among the industrial sectors are autos, electronics, chemicals, pharmaceuticals, machine tools, machinery of many kinds, plastics, metal products, and industrial and scientific instruments and controls.

These could be expected. This report, however, shows that the geographical areas from which technology is imported, or in which technological developments are monitored, go far beyond the countries that come to everyone's mind. And the broad range of industrial sectors in which even this limited group of U.S. company executives—limited in the sense that they represent but a small part of all U.S. manufacturing enterprises—believes it is necessary for the United States to keep informed about foreign technological developments is much wider than often considered.

Responses to The Conference Board survey were received through the Summer and Fall of 1981. The total number of usable responses came from 508 U.S. companies. For the purposes of this report, the responses were divided into two major subgroups by annual sales. Of the total responses, 369 (73 percent) came from companies with annual sales of $10 million or less; 100 (20 percent) came from companies with annual sales of more than $10 million. This second group ranged upward to companies with multibillion-dollar sales. The remaining 39 responses (8 percent) came from companies whose annual sales are not known. Many of these are private companies that are not required to make public reports of their sales. This last group may break down in approximately the same proportion as the larger group of respondents whose size is known, but chances are that the unknown group consists largely of companies with sales under $10 million. In the tables that follow, the group of unknown size is kept as a separate category.

(Note: In the survey report that follows, references to Germany and to Europe mean the Federal Republic of Germany and non-Socialist Europe, respectively, unless the text specifically indicates otherwise. References to "smaller" or "larger" companies mean those with sales of $10 million and under and those with sales of $10 million and over, respectively.)

Highlights of the Survey Results

— Almost one-third of the total participants in this survey think that in some areas of their companies' principal lines of production certain private foreign companies and industrial sectors have technology superior to their own.

— The percentage believing this is even higher (40 percent) among the larger companies—those with annual sales more than $10 million.

— Most respondents do not believe foreign technology in the hands of foreign state-controlled companies is superior to their own.

— Two-thirds of the participants believe that the United States is being outdistanced technologically by foreign companies in some industrial areas other than their own.

— More than three out of five survey participants report that their companies use some foreign-made machinery in their U.S. production.

— The reason most frequently given for using foreign-made machinery is its quality. Other reasons given by the users were price and "not available in the United States."

— Only one out of six participating companies reports it has licenses for foreign products or process technology in the United States. Licenses are a less frequently used method of acquiring foreign technology.

— Fewer respondents report the acquisition of foreign technology through R&D activities undertaken abroad than through the purchase of machinery or licenses abroad.

— More than three-quarters of the total respondents believe it is important (or very important) to monitor technological developments in their industries abroad. Even among the companies that indicated they do not think foreign technology in their industry is superior to their own, more than two-thirds believe it is important for their companies to monitor foreign technological developments in their industries.

— Many companies use both internal sources (e.g., foreign employees or representatives) and external sources (e.g., trade associations, consultants and publications) to monitor foreign technological developments in their industries.

Importance of Foreign Technology to U.S. Companies

Almost one-third of the total number of participants in this survey think that in their companies' principal lines of production certain private foreign companies and industrial sectors have technology in some areas that is superior to their own. Of 508 respondents, 164 (32 percent) expressed that view; 334 (66 percent) did not think foreign technology in such circumstances is superior to their own; and 10 companies (2 percent) did not reply. Among the larger companies (the 100 companies with more than $10 million in sales), even a larger percentage (40) believe that foreign technology is superior to their own in some areas.

The 164 companies that expressed the thought that foreign technology is superior to their own in some areas were asked to list which industrial sectors abroad and which companies outside the United States might have technology of that higher caliber. Of the 164 companies making this statement, 147 reported relevant industrial sectors, the countries where they believed such superior technology existed, and, in some cases, the names of specific companies whose technology in their own industrial sectors they considered could be superior.

List 1 shows the industrial sectors or product groups, by countries, as the survey participants reported them. Germany and Japan, as might have been expected, are the countries most frequently cited. In all, seventeen countries and regions were named, including five in Asia and twelve in Europe.

While many of the respondents named industrial sectors and countries outside the United States where they thought technology was superior, few of the U.S. firms named specific companies in which non-U.S. technology was believed to be superior. List 2 includes those companies cited that could be identified by country.

While U.S. companies may believe that some foreign private companies in their same lines of production may have superior technology, their answers differ sharply when they are asked about the technology available in foreign state-controlled companies. Almost nine out of ten respondents do not think that the technology used by foreign state-controlled companies is superior to their own technology. Only 30 companies (6 percent) felt that some state-controlled companies abroad did have technology superior to their own. A few of these respondents named some foreign state-controlled companies in this context. They included Renault in France; Bohler in Austria; the Petofi Cooperative Farm in Hungary; and Tampella, Valmet and Watsila in Finland.

In addition to being asked their views of foreign technology in their own industries, all participants were asked in what fields "other than your own" they believed foreign companies or industries are currently ahead of, or rapidly gaining on, their U.S. counterparts through technological development.

More than twice as many respondents (343 to 164) who thought there was superior technology abroad in their own fields listed industries other than their own in which they thought foreigners do now, or soon will, have a technological lead over the United States. Whether foreign companies in all these industries do in fact have a technological lead over the United States may be open to debate. But there is no doubt that the impression that the United States is being outdistanced technologically in many industries by many companies in many countries abroad is widespread among the survey respondents.

Some of the industrial fields most frequently mentioned in this category where foreign companies are technologically currently ahead of, or rapidly gaining on, U.S. companies in the same fields are aircraft and equipment, autos, computers, electronics, machine tools, robotics, steel making, and steel products. And, again as could be expected, the countries most frequently named are Japan, Germany and other west European nations.

The extent to which these perceptions of foreign technological superiority are held can be gauged in part by the numbers of recipients giving similar answers. For example, 105 respondents listed Japan as ahead of the United States technologically in the electronics industry. In addition, 43 others listed electronics as an industry where foreign countries lead the United States without naming any specific country. Still others cited Germany, Israel, Singapore, the Soviet Union, and the United Kingdom as being ahead of the United States technologically in one or more parts of the electronics industry. The perception of the U.S. lag in electronic technology is sharp, clear and widespread among the survey respondents.

In automobiles, 102 respondents named Japan as leading the United States, 35 named Germany as technologically ahead of the United States, 42 listed the field without naming a country, and others named France, Italy and Sweden. Fifty participants cited Japan as leading the United States technologically in steel making, 30 in computers, and 27 in robotics. In aircraft and related equipment, countries named for being ahead of the United States are France, Germany, Japan, Switzerland and the United Kingdom.

Besides these widely mentioned areas of U.S.

LIST 1

Countries and Industrial Sectors in which Foreign Companies Are Reported to Have Superior Technology

NOTE: Numbers following items indicate the number of times that item was cited; no number means the item was cited once.

Asia—Thin wood-veneer technology.

Australia—Die casters.

Austria—Industrial silk-screen printing machines.

Czechoslovakia—Art glass.

Europe—Blow molders; flexible packaging; food processing; machine tools; paper converting; paper machine clothing; pharmaceuticals; printing equipment and technology; steel foundries.

Finland—Art glass; electric wire and cable; paper-making machinery and equipment.

France—Acoustics; aircraft equipment; art glass; automated welding systems for auto-body assembly; bakery ingredients; primary metal processing and fabrication; rubber products; woodworking machinery.

Germany—Acrylic bead polymers; appliance controls; art glass; auto engines; bakery equipment; capacitors; ceramic tile technology; chemicals; chemical sealants; china manufacturing; computer software; electrical machinery and equipment; envelope manufacturing equipment; high speed packaging machines (2); industrial-mixers machinery; lighting fixtures; maritime tractor tugs; metal finishing and treating; newspaper-handling systems; non ferrous die casting; paper coating; paper-making machinery and equipment (2); paper-making technology (2); pharmaceuticals; plastic extrusion; plastic products including plastic pipe (2); power systems for computer rooms; printing equipment (2); products combining metal and plastics; robotics; rubber products; seamless tubulars; solar cell array welding; transportation equipment components; woodworking and laminating machinery (2).

Israel—Bakery machinery; pharmaceuticals.

Italy—Ceramic tile manufacturing; high speed packaging machinery; lighting fixtures; pneumatic fluid-power components; woodworking and laminating machinery (2).

Japan—Air-compressor technology (2); alloy steels; amateur receivers; auto production; auto supplies; batteries; capacitors; cast-metal industries; china manufacturing; communication-antennae technology; computer software; electrical machinery and equipment; electric components (2); electron microscopy; industrial coatings; integrated circuits and technology (3); laser-optic videodisc players; lens coating; lithography; machine tools; micro extruded plastic tips for writing instruments; optical equipment; overlay paper for wood; packaging machinery and equipment (2); paper making (2); paper products; pharmaceuticals (3); power tools; printing equipment (2); robotics; seamless tubulars; sensitized imaging paper; shipbuilding; steel foundries (2); steel production (2); thin wood-veneer technology; tv-deflection yoke; woodworking machinery.

Korea—Construction technology.

Netherlands—Bakery ingredients; flexible packaging; industrial silk-screen printing machines; manufacturing fabric and wallpaper; paper converting; plastic pipe; rotary-screen printing equipment.

Scandinavia—Coated carbide inserts; diamond wheels; immunochemicals; primary-metal processing and fabrication.

Sweden—Alloy steel; appliance controls; compressors; explosive accessories; flow and gas measurement techniques; mining technology; paper-making machinery and equipment; power tools; textile machinery.

Switzerland—Conveyor and inserting machines; industrial controls; industrial silk-screen printing machines; paper making; paper products; pharmaceuticals; steam-process equipment; textile machinery; weaving and dyeing of stretch woolen fabrics.

United Kingdom—China manufacturing; explosive accessories; paper products; pharmaceuticals; precision metal refining; primary-metal processing and fabrication; shape controls for aluminum sheet and plate; textile products.

No Country Named—Advanced preservation systems for food products; aircraft components; aluminum building products; aseptic processing and packaging equipment; autos; automotive components for smaller vehicles; bridge building and equipment (2); ceramics; cocoa and chocolate production; consumer leather goods; couplings; direct-reduction processes; electronic components (2); electronic-measuring equipment; electrostatic-finishing equipment; energy conservation; evaporation equipment; fabricated metal products; fabrication of ship modules; fans and blowers (2); flexible packaging for food products; hand-tool design and development; handling and conveying of dried dairy products; heat treating; heavy-metal cutting and bending; high-speed machinery and equipment; hydro turbines; industrial chemicals; injection molding; iron ore pelletizing; machinery for fishing industry; machinery to make consumer leather goods; manufacturing transformers; marine diesels; mining equipment; nuclear equipment; packaging machinery and equipment; paint valves; paper-mill machinery (2); pesticides; pharmaceuticals; plastic molds; plastic shoes; pollution controls; printing equipment and technology; printing plastic containers; resin manufactures (2); robotics; screen printing; ship building; special metal-roll forming; specialty chemicals; synthetic fuels; textile fibers; textile machinery; thermoforming plastic; wire and cable products; wood furniture.

LIST 2

Foreign Companies Reported as Having Superior Technology, by Country

Brazil—Gema.

Denmark—Bergsoe.

Finland—Ahlstrom; Tampella; Valmet; Watsila.

France—Freysinet; Michelin; Pennarroya; Sciaky S.A.

Germany—AZO; Behring; Buettner; Daimler-Benz-Mercedes; Dykerhof; Erwin Kampf Machinen Fabrik; Gunter-Wagner; Honsel-Werke; Jaeger; Kalle; Mannesmann; Mauser Waldeck; Miehle; Otto Wild; Piller; Resopal; Rosenthal; Schenk; Schering GmbH; Schock Co.; Siemens; Staff; Tacke; T.B.S.; Telefunken; Voith Inc.; Volkswagen; Wavin GmbH; Windmoeller & Hoelscher; Winkler & Donnenbier; Zeiss.

Israel—Dead Sea Periclase Ltd.; IBAM.

Italy—Artimede; Dalmine; Flos; Grupo Finanziario Tessile.

Japan—Canon; Choyoda; Dai Nippon; Fuji; Hitachi; Hoya; IHI; Ijima; Jeol; Kenwood; Kyocera; Kyowa Chemical Industry Co., Inc.; Matsushita Electronics; Mitsubishi; Mitutoyo; Murata; NEC; Newlong; Nikon; Nippon Steel; Noritake; Seiko; Sharp; Showa Products Co.; Sony; Sumitomo; Taiyo-Yuden; TDK; Tomioka; Toppan Printing; Toshiba; Toyota; Universal Pioneer; Yaesu.

Korea—Hyundai.

Netherlands—Kats Neparofa.

Norway—EPA A/S; Nordic; Norsk-Hydro.

Sweden—Atlas Copco; Avesta; Kamyr Aktiebolag, Inc.; Nitro Nobel; Sandvik Inc.; Siemens Elema; Stora Kopperberg.

Switzerland—Bobst Manufacturing; Brown Boveri; Ferag A.G.; Staefa.

United Kingdom—British Ropes; Davy-Loewy Inc.; Dolton; Imperial Chemical Industries; Johnson Matthey Inc.; Lead Industries, Inc.; Royal Worcester; Simon Machinery.

technological lag, some of the more exotic citations of technological leadership abroad include applied microbiology in Denmark, the sewing of clothing in Hong Kong, solar energy in Israel, synthetic fuels in South Africa, and commercial fishing in the Soviet Union. A full listing of the countries and industrial sectors, other than the respondents' own industries, that are viewed by them as areas in which the United States is currently, or soon may be, lagging technologically is found in List 3.

LIST 3

Foreign Technological Leadership, by Country and Industry Sector in Field Other than Respondents' Own

NOTE: Numbers following items indicate number of times that item was cited; no number means the item was cited once.

Australia—Steel.

Brazil—Metal castings.

Canada—Injection molding machines; marker and pen assembly equipment; plywood manufacturing.

China—Metal castings.

Denmark—Applied microbiology; enzymes.

Europe—Aerospace and aircraft (2); dairy industry; life sciences; machine tools (2); metal-forming equipment; pharmaceutical-manufacturing equipment; plastics machinery; pollution-control equipment.

France—Aerospace and aircraft (3); automated warehousing; autos (5); nuclear energy (3); optics; plastic-fabrication processes; prefabricated houses; railroads and equipment (2); robots (2); rubber products; textiles.

Germany—Aircraft production (3); automotive sealings and coatings; autos (35); chemicals (5); chemistry; coal gasification; computers (2); concrete mixers and admixtures; cosmetics; electronics (5); electro deposition; extrusions; farm equipment; food-industry machinery; industrial instruments and controls; industrial machinery (9); injection-molding machines; machine tools (15); marker and pen assembly equipment; mechanical equipment; metal coatings; nuclear power; optical equipment (4); packaging; petrochemical coatings; pharmaceuticals (4); photographic equipment (4); plastic-fabrication processes; plastics machinery; plastic-mold design; production techniques; precision-manufacturing equipment (2); railroads; robots (3); ship building; shoe machinery; small diesel engines (2); steel making and products (12); television equipment; testing equipment; textile machinery (5); vacuum pumps.

Hong Kong—Optical products and equipment; sewing trade.

Israel—Electronic equipment for graphic-art industry; production scheduling; solar energy.

Italy—Autos; hardware; jewelry; leather goods; machine tools; plastic-fabrication processes; printing equipment; textile machinery (2).

Japan—Aircraft; air frames; appliances (3); audio equipment (4); automation (2); autos (102); baking equipment; ball and roller precision bearings (2); biochemical areas (2); business machines; calculators (3); chemicals; commercial fishing; computers and equipment (30); corporate management and interpersonal skills; cosmetics; electrical equipment; electronics (105); enzymes, farm equipment; foundries; industrial instruments and controls (2); industrial machinery (2); injection-molding machines; life sciences; machine tools (16); magnetic recording; marker and pen manufacturing; mass transport (3); materials-handling equipment; metal coatings; metal-fabrication equipment (2); metallurgy; numerical-control units (2); optics and optical equipment (13); pharmaceuticals (2); photographic equipment (19); plastics machinery (2); precision machinery; printing equipment; production techniques (2); productivity; railroad engines; railroad-passenger services (2); robotics and automated equipment (27); ship building; small engines (2); steel making and products (50); synthetic coated fabrics; synthetic fuels; telecommunications; television; radios and video recorders (13); textiles; textile machinery (3); watches (4); welding processes; word processors.

Korea—Metal castings; ship building; steel; textiles.

Netherlands—Applied microbiology; enzymes; printing equipment.

Poland—Plywood manufacturing.

Scandinavia—Dairy industry.

Singapore—Consumer electronics.

South Africa—Synthetic fuels.

Sweden—Autos and auto design (3); foundry equipment; productivity; robots and automated equipment (2); rolling mills for tool steel; steel alloys.

Switzerland—Aircraft; cosmetics; farm equipment; industrial instruments and controls; machine tools (3); newspaper handling systems; packaging; pharmaceuticals; printing equipment; railroads; robots; textile machinery (4).

Taiwan—Metal castings; plywood manufacturing; textiles.

USSR—Commercial fishing; diamonds; electronics; magnito-hydrodynamics; nuclear energy (2); pharmaceuticals; welding.

United Kingdom—Aircraft and aerospace (3); electronic equipment for graphic-arts industry; pharmaceuticals; primary metals; robots; textile machinery; turbine blades.

No Country Named—Aircraft (3); alternative-energy resources; aluminum-brazing alloys; amusement equipment; apparel; assembly-line production techniques; athletic equipment; atomic energy; audio equipment (2); autos (42); automated-machine tools (3); automotive farm machinery; chemicals (2); aviation and avionics; chemical synthesis; commercial fishing; communications; computers (7); electric-power equipment; electric mechanical equipment; electronics (43); electronically controlled pressure-relieving devices for chemical industry; energy utilization (2); flatware; food packaging; heavy equipment (2); hydraulic rock drills; industrial instruments and controls (2); injection molding; laser technology; long-wall mining equipment; lumber-manufacturing technology; machine tools (8); management skills; money management; office machines and equipment; optics (4); pharmaceuticals (3); photographic equipment (4); plastic packaging; plastic processing; plywood; printing; process-equipment technology; productivity; residential constructions; robotics (6); ship building (2); shoes (3); steel (15); tape-control machines; television and radios (7); textiles (2); textile machinery (2); transportation technology and equipment (3); turnkey construction; ultraviolet resin technology; weapons and weapon systems (2).

Country Named but No Industry Sector Listed—Canada; Germany (4); Japan (7); Portugal; Switzerland.

Acquisition of Foreign Technology by U.S. Companies

Technology can be exchanged among countries and companies in one or more ways. One of the most common instruments of technology exchange is the purchase and use of foreign made machinery. The extent to which foreign made machinery is used in the U.S. production of goods is one indication of the importance of foreign technology to the United States.

Use of Foreign-Made Machinery

More than three out of five (63 percent) of the 508 survey participants report that their companies use some foreign-made machinery in their U.S. production. Company size makes some difference; the larger companies more frequently report using foreign-made machinery. (See Table 1.)

It was noted earlier that 164 respondents thought that private companies abroad in their same product lines had technology superior to their own. Of these 164, 123 (75 percent) actually use some foreign machinery in their U.S. production. That is not surprising. What is surprising, however, is that more than half (57 percent) of the 334 respondents who reported that they do not think foreign technology superior to their own, are also using some foreign made machinery in their U.S. production.

There are, of course, many possible reasons for using foreign instead of U.S. machinery. Among those reasons are price, availability and delivery schedules. The reason most often given for using foreign machinery (cited by 56 percent of those who do so) is its quality. (See Table 2).

While many U.S. companies use foreign technology in the form of foreign machinery in their domestic U.S. production, many also use U.S. technology in their foreign operations. Only one-third (169) of the total respondents reported what technology they use in their foreign manufacturing operations. (Some of those that did not respond indicated explicitly that they left the question unanswered because they do not have foreign manufacturing operations. Others gave no reason for not replying.) A very large majority of those who did reply report that they use U.S. technology in their foreign operations, although not necessarily exclusively. (See Table 3.)

Licensing

A second common way of sharing technology across international borders is through licensing. A relatively small number of respondents (86, or 17 percent of the total) report that their companies have licenses in the United States for any foreign products or process technology. (The ratio of those that have acquired foreign technology by using foreign machinery to those that have acquired it through foreign licenses in the United States is approximately four to one.) Of the 86 companies, slightly more than half (45) are among the larger companies.

List 4 presents the product fields in which U.S. licenses are held by U.S. companies for foreign products or process technology. For a majority of U.S. companies (51 out of 86) that hold foreign licenses, the licenses are not limited to the U.S. market. The license may frequently permit the U.S. license holder to market its product in all of North America or, less often, in all of the western hemisphere or, still less often, in even wider geographic areas.

Licensing, like other means of exchanging technology across national boundaries, is a two-way process. Among the respondents, many more companies grant licenses for their own product and process technology to unrelated foreign firms than acquire such licenses from them. One hundred fifty companies (30 percent of the total) report that they license their own technology to unrelated companies in countries outside the United States. In contrast to the companies reporting the acquisition of licenses from abroad, a majority of the survey companies

Table 1: Use of Foreign-Made Machinery in U.S. Production, by Industry Size

Use Foreign Machinery	*Smaller Companies*	*Percent*	*Larger Companies*	*Percent*	*Size not known*	*Percent*
Yes	214	58	79	79	26	67
No	154	42	20	20	13	33
No reply	1	[a]	1	1	0	0
Total	369	100	100	100	39	100

[a]less than 1 percent

Table 2: Reasons for Using Foreign-Made Machinery in U.S. Production.

Reason	Number	Percent of 319 Companies using[1]
Quality	177	56
Price	155	49
Not available in United States	57	18
Delivery schedules	30	9
Special or superior technology abroad	15	5
More comprehensive designs	5	2
More appropriate designs	3	1
Foreign parent company provides	2	1
Acquired foreign equipment with acquisition of foreign firm	2	1
All Other	10	3

[1]Mutiple answers allowed.

Table 3: Source of Technology for Foreign Operations (169 companies)

Source	Number	Percent[1]
United States	145	86
Local country	38	23
Third country	9	5

[1]Multiple answers allowed.

that grant foreign licenses are from smaller companies. (See Table 4.)

Technology licensed to firms in other countries is sometimes changed by the licensee to adapt a product to a local market or to find ways of improving the product or the acquired process technology. Adaptations or other more significant changes by the licensee may, in turn, be provided to the original licensor by the licensee making the changes. In many license agreements, the licensee is *required* to supply the licensor with any such changes. Among the 150 U.S. companies reporting the licensing of their technology abroad, more than three-quarters stipulate in their license agreements that any changes or adaptations in the licensed technology made by the licensee should be supplied back to the licensor. (See Table 5.) A U.S. company licensing its technology can, in these circumstances, find itself an importer as well as an exporter of technology.

LIST 4

Product Fields in which U.S. Licenses Are Held for Foreign Products or Technology

NOTE: Numbers following items indicate the number of times that item was cited; no number means the item was cited once.

Acoustics; automobiles; automobile coatings; axial compressors; automatic tube-cleaning system.

Bearings; batteries (2); brake equipment for railway vehicles; beverage cases; bucket-wheel excavators.

Construction products (4); construction equipment; chemicals; consumer electronic products; curved tooth couplings; coal-gasification equipment; chemical process & technology for urea-fertilizer production; container-filling equipment.

Dispensing caps; dehumidification and energy-recovery equipment; diesel engines.

Electronic components (2); electrostatic painting & finishing equipment (2); electronic equipment; electromagnetic casting; expanders.

Fans and blowers (2); filters; forging hammers; fabric filters; food products.

Gearing designs; glass products.

Heat-transfer labels; heat exchangers (2); High-voltage utility products.

Ink products; industrial chemicals; industrial mixers; industrial instruments.

Mining equipment (2); military equipment; marine diesel engines; men's apparel; medical equipment; marine oil-water separators.

Optical video-disc equipment; optical lens; optical-thin films.

Paper-mill machinery; plastic products and processing (7); pharmaceuticals (4); paper coating; power-industry equipment; packaging equipment; petrochemicals; paper-machine clothing.

Rubber products; railroad-signaling devices.

Steel products (2); specialty chemicals; shipboard winches; steel process; sterile-manufacturing process; sponge-rubber extrusion.

Torquing tools; telecommunications equipment; tungsten-carbide wear parts; tobacco products.

Vertical-turning lathes.

Welding systems for automotive-body assembly.

Table 4: U.S. Companies Reporting the Licensing of Their Technology to Unrelated Foreign Firms, by Size

Size (by sales)	Number	Percent
Under $10 million	79	53
$10 million and over	62	41
Size unknown	9	6
Total	150	100

Table 5: Provisions in U.S. License Agreements Affecting Changes or Adaptations to Licensed Technology

Provision	*Number*	*Percent*
License agreements provide for foreign firms to supply licensors with any changes or adaptations made to licensed technology	117	78
No provision to supply licensor with any changes or adaptations	30	20
No response	3	2
Total	150	100

Research and Development

A number of U.S. companies have ongoing research and development activities in other countries. Technology improvements and new developments made in those countries and brought back to the United States for incorporation into U.S. production are another source of technology imports to the United States. The original source of the import is the U.S. company's own activities abroad, rather than a license acquired or machinery purchased from some unrelated foreign company.

Very few of the responding companies undertake research and development activities abroad. Of the 508 respondents only 78 do so, and, as might be expected, company size makes a difference. Of the 78 companies that do carry on research and development activities abroad, 59 percent are the larger companies, 31 percent are smaller companies, and 10 percent are companies whose size is not known from their replies. In each of these groups, however, more than half of the companies do not have any research and development activities abroad. Of the larger companies, only 46 percent do any R&D abroad. For the smaller companies, the figure is 7 percent, and for the companies of unknown size it is 21 percent.

The 78 companies that do have some R&D activities abroad were asked to name the countries and product fields in which they undertake such activities. All but one of these companies replied. Twenty-eight countries and regions, led in frequency by France, Germany, Japan and the United Kingdom were named. Pharmaceuticals and electronics led an extensive list of product fields. The complete list of countries and product fields is found in List 5.

LIST 5

R & D Activities Abroad, by Country and Industry or Product Line

NOTE: Numbers following items indicate the number of times item was cited; no number means the item was cited once.

Australia—Consumer cleaning products; electronics; home appliances; power-distribution systems; tobacco products.

Asia—Heat-pipe technology.

Belgium—Electrochemicals; electronic components (2); industrial chemicals; industrial lubricants; magnetic heads; petrochemicals; petroleum exploration and production; specialty chemicals; transportation fuels and lubricants; wire and cable products.

Benelux—Tread rubber and related products.

Brazil—Appliance controls; automatic-switching equipment; electronic components; environmental products; mining equipment; specialty chemicals; valves; wire and cable products.

Canada—Automatic-switching equipment; automotive parts; consumer food products including mixes, glass goods, and meats; machine tools; medical equipment (2); paper products; pharmaceuticals (2); polymers; pumps and oil-field machinery.

Chile—Fabricated steel products.

Europe—Elastomer and polymer products; electronics; heat-pipe technology; medical equipment; plastics packaging.

France—Acoustical products; aerosol valves and pumps; aircraft equipment; appliance controls; chemicals (unspecified); consumer cleaning products; diesel-engine components; electrochemicals; electronic components (2); electrostatic equipment for coating industry; environmental products; glass and ceramic technology; home appliances; industrial chemicals; mining equipment; pharmaceuticals (4); power-distribution systems; reinforced-earth technology; specialty chemicals; transportation equipment; valves; wire and cable products.

Germany—Acoustical products; computers; diesel-engine components; electron optics; electronic and electrical components; electrostatic-painting equipment; fabricated steel products; health-care products; high-temperature textiles; hydraulic valves and actuators; industrial instruments and controls (3); industrial

lubricants; microwave devices, antennae and systems; petrochemicals; petroleum exploration and production; photo systems; plasma physics; power-distribution systems; process-control instrumentation; transportation equipment (2); transportation fuels and lubricants; tread rubber and related products; ultrasonics.

Greenland—Electronics.

Hong Kong—Electrical personal-care products; health-care products; printing equipment and technology.

India—Health-care products.

Ireland—Power-distribution systems; painting equipment and technology.

Israel—Medical equipment.

Italy—Chemicals (unspecified); electrochemicals; industrial chemicals; microwave devices, antennae and systems; pharmaceuticals; rubber products; specialty chemicals; transportation equipment.

Japan—Appliance controls; chemical oil and fuel additives; electrical personal-care products; electrochemicals; electronic components and materials (2); electrostatic painting equipment; fasteners and applicators; food-product packaging equipment; health-care products; industrial chemicals; paper products; pharmaceuticals (2); specialty chemicals.

Latin America—Automotive equipment; building and construction materials and technology.

Mexico—Automatic-switching equipment; fertilizer chemicals; stainless-steel alloys.

Netherlands—Automatic-switching equipment; communications systems for cable and subscription TV; electronic grinding-machine feeding devices; glass reinforced concrete; hydraulic components; livestock poultry nutrition; materials-handling equipment and systems; shear knives; static eliminations.

New Zealand—Specialty chemicals.

Singapore—Optics and optical instruments.

South America—Power-distribution systems.

Spain—Electric components; health-care products; poultry nutrition; reinforced-earth technology; ultrasonics; wire and cable products.

Sweden—Air filtration; dehumidification; environmental products; magnetic separators; mining equipment; paper machine clothing; tread rubber and related products; valves.

Switzerland—Air filtration; chemicals (unspecified); electrochemicals; electronic materials and components; electrostatic equipment for the coating industry; industrial chemicals; magnetic separators; pharmaceuticals; specialty chemicals; tobacco products.

Taiwan—Electrical personal-care products; health-care products.

United Kingdom—Acoustics; aerodynamics; automatic-switching equipment; chemical oil and fuel additives; computers; consumer cleaning products; dehumidification; diesel-engine components; electrodeposition; electrochemicals; electron optics; electronic and electrical components (2); environmental products; fabricated steel products; glass-reinforced concrete; health-care products; home appliances; hydraulic components (2); industrial chemicals; industrial instruments and controls; industrial lubricants; kitchen utensils; machine tools; materials-handling equipment and systems; metal finishing; microwave devices; antennae and systems; mining equipment; paper products; petrochemicals; petroleum exploration and production; pharmaceuticals (2); poultry nutrition; razors and blades; rubber and plastic extrusion; specialty chemicals; transportation equipment; transportation fuels and lubricants; ultrasonics; valves.

No Country Named—Automotive equipment.

Monitoring Foreign Technological Developments

With three out of five companies reporting the current use of foreign-made machinery in their U.S. production and with almost one-third of the respondents indicating they think foreign private companies have technology in some areas superior to their own, it can be expected that most respondents believe it useful—or even necessary—to monitor foreign technological developments in their industries on some regular basis. And such is the case.

More than three-quarters of the total respondents (390) believe it is "very important" or "of some importance" for their companies to monitor technological developments in their industries abroad. It is not surprising to find most of the companies in the group of almost one-third of the total that thinks foreign technology in some areas of their industry is superior to their own also in these 390. What is surprising, however, is that even among the 334 companies that indicated they do not think foreign technology in their industry is superior to their own, more than two-thirds still believe it is important for their companies to monitor foreign technological developments in their industries. This expressed need to monitor foreign technological developments, even when such current developments are not considered up to U.S. standards, implies an awareness on the part of a large portion of the survey respondents that new technology is regularly being developed abroad and may at some time have a significant impact on their industries.

Countries and Industrial Sectors to be Monitored

Survey participants were asked to name the countries, if any, in which they believe technological developments

should be monitored for their companies. Answers were received from 349 (69 percent) of the respondents. Thirty-six countries and regions were named, led by Canada, Europe, France, Germany, Japan, Sweden, Switzerland and the United Kingdom. The list included others, less frequently named, and probably not usually considered by U.S. business executives as technologically advanced—for example, China, Hungary, Indonesia, Mexico and Romania.

Among the industry fields most often cited in this connection are chemicals, mining and metal industries, machinery and machine tools, electronics, food products and processing, industrial instruments and controls, packaging, printing, textiles and textile machinery, plastics and shipbuilding. A full list of the countries and industrial fields suggested for necessary monitoring by survey participants is found in List 6.

Who Monitors?

On the assumption that many responding companies would use the same personnel to monitor foreign technological developments that they use in their domestic research and development activities, the survey sought some general information in this area. More than half the total respondents (58 percent) reported that their companies have assigned principal responsibility for technical research and development to an individual or special staff. Although there is some variation by company size (70 percent for larger companies and 53 percent for the smaller), more than half the companies in each size category follow this procedure.

In order to ascertain the level to which the 292 respondents assigned R&D responsibility, they were asked to state the title of the officer. The specific titles varied widely, but the level most frequently cited is that of vice president, as the tabulation below shows.

The functional areas in which these officers hold responsibility are mainly engineering and research and development. For example, 33 held the title of vice president for R&D and 13 were directors of R&D; 29 were vice presidents, engineering; 13 were directors of engineering, and 11 were chief engineers. In many smaller companies, however, responsibility for R&D is part of the general management function, and for 33 respondents the principal R&D officer is the company president. Other company areas from which the principal R&D officer is selected, according to respondents, are manufacturing, productivity, product development, marketing, quality control, and systems research.

The assumption that monitoring foreign technical developments is largely done by the same personnel responsible for domestic R&D is largely borne out. Of the 508 respondents, 242 reported that they assigned responsibility for monitoring foreign technical developments to the same officer who has overall R&D responsibility. This number is slightly under half of all respondents but is 83 percent of those companies (292) that said they had an officer specifically assigned principal responsibility for R&D activities.

Many respondents indicated the same officer in their companies is *not* responsible for monitoring foreign technical developments and managing domestic R&D activities. For a large number of these the reason is simply the fact that no one has been specifically designated to be the R&D officer at home or abroad. Seventy-nine companies report that they assign the responsibility for monitoring technical developments abroad to someone other than the person given R&D responsibilities or assigned to monitoring domestic technical developments. Taking together the number assigning R&D personnel (242) and the number assigning others (79), a total of 321 companies (63 percent) have someone assigned to monitor foreign technical developments at least on a part-time basis and regularly, even if not continuously. The tabulation below shows the persons, other than principal R&D officers, who are assigned the duty of monitoring foreign technical developments. As this assignment may be shared, the 79 companies reported 87 titles.

Title or Level	*Number*
Vice President	127
Directors and Managers	77
President	33
Engineers	17
Senior Vice President	10
Scientists	7
Executive Vice President	6
Other	5
Subsidiary Staff	3
Vice Chairman	3
Chairman	2
Divisional Staff	1
No Reply	1
	292

Title	*Number*
President	19
Vice President	17
Directors and Managers	13
Engineers	11
Committees	6
General Manager	5
Group or divisional staff	4
Sales staff	4
Foreign operating unit presidents	3
International staff	3
Chairman	1
Executive Vice President	1
Total	87

(text continued on page 15)

LIST 6

Suggested Countries and Industry Sectors Where Monitoring Foreign Technological Developments Should Be Undertaken

NOTE: Numbers indicate number of citations for preceding item. No number means item was cited once.

Asia—Industrial instruments and controls; textile machinery.

Australia—Beverage products; forest products; metal products (2); mining equipment; nonelectrical machinery; photographic equipment.

Austria—Alloy steels.

Belgium—Metal products; mining equipment; nonelectrical machinery; packaging technology.

Brazil—Alternate fuel-propulsion systems; shoe manufacturing; transportation equipment.

Canada—Automatic-switching equipment; business machines; chemicals; electronics; explosive accessories; food processing, packaging and preservation; industrial chemicals; metal products; nonelectrical machinery (2); paper-making machinery and equipment; plastic-extrusion technology; specialty chemicals.

China—Shoe manufacturing.

Commonwealth—Industrial instruments and controls.

Denmark—Chemicals; food products; industrial instruments and controls; packaging technology; printing and graphics; textiles.

East-Bloc Countries—Industrial chemicals; metal products; nonelectrical machinery; specialty chemicals; stone, clay, glass, and concrete products.

Europe—Aircraft and aerospace; auto technology; batteries; building products and construction technology (2); business machines; chemicals; electrical machinery and equipment (2); food products, processing and preservation (2); forest products; health-care products; industrial chemicals; industrial instruments and controls (2); industrial tools and equipment, metal products, medical equipment (2); mining and metal industries (5); nonelectrical machinery (5); packaging technology; pharmaceuticals; product systems; resin manufacturing; rubber and plastic extrusion; rubber products; screen printing; specialty chemicals; stone, clay, glass and concrete products; textiles (4).

Finland—Electric wire and cable; forest products; paper-mill machinery and equipment (2); pollution controls.

France—Aircraft equipment; alternate fuel-propulsion systems; autos and components; beverage products; chemicals (2); communications equipment; construction technology; electrical machinery and equipment (4); electronic components and equipment (5); explosive accessories; food-packaging equipment; food products and processing (3); forest products; furniture; industrial instruments and controls (4); machine tools; medical equipment and systems; metal products and processing (7); mining equipment; nonelectrical machinery (9); oil exploration and production; optics and optical equipment (2); paper making; petrochemicals (2); petroleum products and technology (2); pharmaceuticals (2); photographic equipment; steel products; transportation equipment (3).

Germany—Aircraft equipment; apparel (2); appliance controls; autos and auto components (3); automatic-switching equipment; bakery equipment; beverage products (2); biotechnology; bridge-building equipment; ceramic tiles; chemicals (9); chemical sealants; chocolate production; CNE application to girders; combined metal and plastic products; construction technology; consumer-health goods electrical equipment and machinery (14); electronic equipment and components (7); envelope-manufacturing equipment; environmental systems; food-products industry (8); forest products (4); foundries; furniture manufacturing (2); gear manufacturing; grinding technology and equipment; home appliances; industrial instruments and controls (11); industrial mixers; lighting fixtures; lithography, machine tools (3); medical equipment and systems; metal products and processing (20); mining equipment (2); molding techniques; nonelectrical machinery (35); oil exploration and production; optics and optical equipment (3); packaging technology (3); paper-coating products; paper making and products (7); petrochemicals (2); pharmaceuticals (4); plastic products (8); plastic technology (4); power systems; printing and publishing (10); pumps; resin technology; robotics; rubber products (4); shipbuilding; steel products (3); stone, clay, glass and concrete products (2); synthetic fuels; textiles (6); textile machinery (4); transportation equipment (3); valves; woodworking machinery (2).

Hong Kong—Electrical machinery and equipment; metal products; plastic products.

Hungary—Nonelectrical machinery.

Indonesia—Forest products.

Israel—Chemicals; electrical machinery and equipment (2); industrial chemicals; nonelectrical machinery and equipment; printing technology (2); specialty chemicals.

Italy—Apparel; auto industry; beverage products; ceramic tile; chemicals (4); combined metal and plastic products; consumer leather goods; electric wire and cable; electrical machinery and equipment (3); electronics; food processing and equipment; forest products; furniture; glaze technology; lighting fixtures; machine tools; metal products (2); mining equipment; nonelectrical

(list continues)

machinery (4); packaging equipment; paper making; pharmaceuticals; photographic equipment; plastic products and technology (2); printing; rubber products; shoe manufacturing; steel products; stone, clay, glass and concrete products; textiles; transportation equipment; woodworking machinery (3).

Japan—Aircraft equipment; apparel; appliance controls; auto industry (5); automated vacuum brazing; automatic-switching equipment; automation; bakery equipment; batteries; biotechnology; business machines; ceramics (2); chemicals (5); chemicals sealants; china manufacturing; combined metal and plastic products; communications equipment; construction technology; consumer leather goods; electical equipment and machinery (19); electrical personal-care products; electronic equipment and components (14); food products and processing (4); forest products; foundries; gear manufacturing; grinding technology and equipment; health-care products; home appliances; industrial chemicals; industrial coatings; industrial instruments and controls (11); iron and steel products (4); lithography; machine tools (3); medical equipment; metal products and processing (21); mining technology and equipment (3); molding techniques; nonelectrical machinery and equipment (37); optical technology (3); optical thin films; packaging technology and equipment (4); paper coatings; paper-mill machinery and products (4); petrochemicals; petroleum refining; pharmaceuticals (5); plastic products (8); plastic technology (2); printing and publishing (8); pumps; robotics; rubber products and technology (6); satellite broadcasting (2); shipbuilding; specialty chemicals; stone, clay, glass and concrete products (3); synthetic fuels; textiles (4); textile machinery; transducers; transportation equipment (3); valves.

Korea—Food products; forest products; metals industry; plastics; shipbuilding.

Mexico—Textiles.

Netherlands—Automatic-switching equipment; chemicals (3); electronics (2); environmental systems; extrusion technology; food products (3); glass-reinforced concrete; industrial instruments and controls; packaging technology; printing equipment.

Norway—Housing construction; industrial instruments and controls; metals processing; shipbuilding.

Poland—Metal products; mining equipment; nonelectrical machinery; transportation equipment.

Romania—Metal products; mining equipment; nonelectrical machinery; transportation equipment.

Scandinavia—Acoustics; food freezing; forest products; metal products and processing; paper products; pharmaceuticals; plastic extrusion and products (2).

Singapore—Electrical machinery and equipment; shipbuilding.

South Africa—Beverage products; chemicals; explosive accessories; iron and steel products; metal products; mining equipment; nonelectrical machinery.

Spain—Ceramic tile; chemicals; metal products; mining equipment; nonelectrical machinery (2).

Sweden—Appliance controls; bridge-building equipment; electrical machinery and equipment; explosive accessories; food products and processing (2); forest products; furniture; grinding technology and equipment; housing construction; industrial instruments and controls; iron and steel products; machine tools; medical equipment and systems; metal products (2); mining equipment; nonelectrical machinery (6); packaging equipment; paper-making machinery and equipment; shipbuildng; textile machinery.

Switzerland—Chemicals (2); chocolate production; CNE applications to girders; electrical machinery and equipment; electronics; food products and processing; forest products; inserting and mailing equipment; metal products (3); mining equipment; nonelectrical machinery (3); plastic; printing and publishing (2); textiles and textile machinery (5); transportation equipment.

Taiwan—Forest products; metal products; plastics (2); shoe manufacturing.

Third-World Countries—Wood products.

USSR—Iron and steel products; metal products; mining equipment; nonelectrical machinery (2); oil exploration and production; transportation equipment.

United Kingdom—Autos; chemicals (4); china manufacturing; chocolate production; communications equipment; electrical machinery and equipment (6); electric wire and cable; electronics (6); explosive accessories; forest products; foundries; furniture; industrial instruments and controls (6); iron and steel products (2); machine tools; metal products (7); mining equipment; nonelectrical machinery (9); oil exploration and production; optical equipment; paper industry; petrochemicals (2); petroleum products and technology; pharmaceuticals (3); photographic equipment; plastics; printing (3); pumps; rubber products; shipbuilding; stone, clay, glass and concrete products (2); textiles (3); tobacco products; transportation equipment; valves.

No Country Listed—Acoustical technology for musical instruments; agricultural grain handling and drying equipment; construction techniques; diesel engines; dyestuff; electrical machinery and equipment; electronics (2); fabric-impregnating technology; implantable materials; machinery and equipment for fishing industry; medical instruments and equipment; metal-fabrication techniques; mold making for plastic industry; nuclear technology; overlay-paper production; paper products; precious-metal refining; printing technology; resin chemistry; resin-transfer molding; silk-screen engraving; space technology; transportation equipment; wood-grain reproduction.

Country Named but No Industry Sector Listed—Australia; Canada; Europe (3); Far East; France (10); Germany (18); Italy (6); Japan (16); Sweden (2); Switzerland (4); United Kingdom (6).

(text continued from page 12)

Sources of Information for Monitoring Foreign Technology

The person assigned the responsibility for monitoring foreign technological developments has a variety of information sources to draw upon. Some of these are internal company sources. They include the foreign subsidiaries and other foreign-related units that are charged with the responsibility for collecting all relevant technical data to meet the company's needs within their particular geographic area of responsibility. These foreign units often include foreign licensees as well as those units in which the U.S. company has direct equity. Several respondents also report that they rely on their sales representatives abroad, whether company employees or company agents, to gather during their business travels technical data that might be of interest to the home company.

Company representatives are often expected to make regular visits to foreign trade shows, and sometimes to foreign competitors, to view the latest technical developments. In a few cases, respondents pointed out that they have either formal or informal, but regular, exchanges of technical information with foreign companies in their industry or with the representatives of such foreign firms in the United States.

For many of the respondents the reliance on these internal company resources and direct relationships to collect data about foreign technological developments is their main, and in a few instances, their only source of such information. For many others, however, persons assigned company responsibility for monitoring foreign technological developments turn to a number of outside sources as well.

The most frequently reported outside source of information, as might be expected, is publications. These include trade and industry journals, business directories, technical journals, patent reports, and general scientific journals. These are often supplemented by reports of information collected by trade and industry associations on which many companies, especially smaller companies, rely for gathering information about foreign developments in their industries.

Allied with the review of patent publications mentioned by several companies, one company reported that it relies on "our patent attorneys" to collect from foreign sources technical information useful to the company. Several respondents from companies that use foreign-made machinery reported reliance on these foreign-equipment suppliers to keep them abreast of technical developments in their respective countries or regions.

Other sources of technical information from abroad mentioned by respondents are market research organizations and computerized data bases. Of the latter, those of Lockheed, Control Data, and Dataquest were specifically cited as sources of information for foreign technical developments.

Finally, a number of respondents named U.S. Government departments and agencies as information sources that they regularly monitored for technological developments abroad. Of the total respondents approximately one in eight reported that the company receives foreign technical information on a regular basis from a U.S. government agency or department. Most frequently mentioned as a source for such information is the U.S. Department of Commerce, followed by the National Technical Information Service (which is a unit of the Department of Commerce), and NASA. A full list of the government agencies and departments regularly used is found in List 7.

A few of the respondents indicated they were opposed to using government sources for information about foreign technical developments. Some of these felt that government reports were too generalized, too late for the company's use, or not available in a form for easy use by the company. Others objected on more general philosophical grounds that they did not wish to rely on government sources for any of their business needs; instead they preferred their own sources or other private-sector sources. For a large portion, more than three-quarters of the more than 400 companies that do not use government information sources for foreign technical information, the main reason is that they are simply not aware that such information services are available.

LIST 7

U.S. Government Departments and Agencies from which Companies Receive Technological Information (63 responding companies)

Department of Commerce	23
National Technical Information Service	8
National Aeronautics and Space Administration	7
Department of Energy	6
Department of Defense	4
Patent Office	3
Department of the Navy	1
U.S. Navy Office of Research-London	1
Naval Research Laboratories	1
Office of Naval Intelligence	1
Department of Agriculture	1
U.S. Forestry Service	1
U.S. Customs Service	1
General Services Administation	1
Department of State	1
Tennessee Valley Authority	1
National Research Council	1
U.S. Bureau of Mines	1
Government Printing Office-Monthly Catalog	1
None listed	15

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The New Corporate Programs

by Nathan Weber

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Introduction

Commuting to and from the workplace has traditionally been the responsibility of the individual employee. By private automobile or by some type of public transit, millions of workers in U.S. corporations have, for the better part of this century, found their own ways to get to their jobs and back home. Their employers were primarily concerned that they arrived on time, not how they chose to go. So long as public transit operated efficiently enough, and prices for automobiles, fuel and loans were generally affordable, corporate management saw no need to involve itself with commuter transportation.

Today, both mass transit and the private automobile are experiencing severe—some would say overwhelming—difficulties. The multiple effects of this dual crisis on the economy in general, and on individual businesses, have motivated an increasing number of firms to experiment with alternative programs of commuter transport in both urban and suburban areas. Sometimes referred to as paratransit, the new programs address not only immediate commuter needs, but also such widely disparate areas as energy conservation, worker productivity, traffic management, zoning and parking ordinances, pollution and tax reform. At least one new service industry—third-party vanpool operations—has been developed as a result, and some employee participants have found new ways to increase their weekly earnings by retaining a percentage of the fares. While a few companies had been involved in commuter transit for decades, almost all of the new programs have fairly recent origins: The earliest were begun in the mid-1970's and continue through the present. (See Chart 1, p. 4.)

What Are the New Programs?

Vanpooling—a program under which eight to fifteen passengers who live within close proximity of each other ride to and from work in a van along a route established by themselves—may be the most well-known. Research undertaken by the National Association of Van Pool Operators, Inc., the primary trade association in the field, indicates that from 1976 to 1981 the number of vanpools operated by corporations, government agencies, service companies, and small businesses has grown about tenfold—from 2,000 to between 18,000 and 20,000. Some 200,000 people commute via vanpools, saving an estimated 115 million gallons of gasoline a year.[1]

Other paratransit programs include carpools, corporate subsidization of employee transit fares, the use of charter or subscription buses, and management assistance to public transportation authorities. Some companies are heavily involved in these projects; others participate only so far as providing special parking privileges, or encouraging their employees to patronize the mass-transit system.

Among the most significant aspects of the new programs is that, for the most part, they have not provoked negative responses from traditional transportation providers—for example, the public systems, private transit operators, or automobile dealers. Indeed, a considerable amount of cooperation has been in evidence. One-third of the 235 corporate programs surveyed in this report intersect with mass-transit systems, both governmentally and privately operated. In addition, a considerable amount of corporate managerial assistance is offered to public transit authorities—over one-fourth of the surveyed companies provide such aid. Likewise, government agencies provide training manuals and workshops on establishing corporate programs. At least one major automobile company has established a leasing arrangement for carpool and vanpool programs, and two auto producers provide ridesharing programs for their own employees.

Public-private partnerships have been forming on the administrative level as well. Transportation management associations—nonprofit organizations consisting of local businesses, community leaders, land developers, and sometimes government agencies—are emerging to deal with transportation problems too complex for any one public or private group acting alone.[2] To the extent that the problems in traditional public transit and in the private automobile industry deepen, such cooperation will likely continue into the foreseeable future.

About This Report

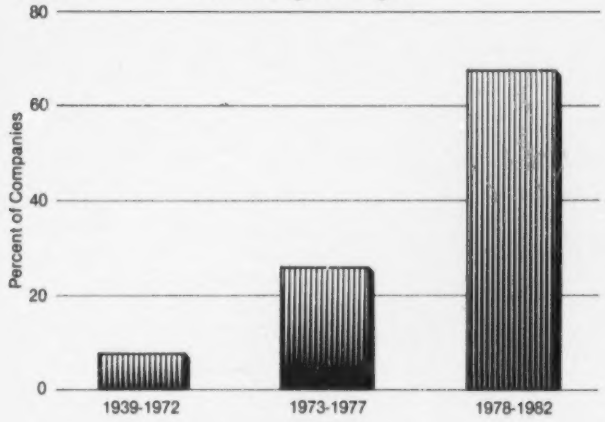
A survey of 235 corporations presently operating employee-transportation programs forms the basis of this report. Developed with the cooperation of business and governmental transportation and ridesharing experts, a questionnaire was sent to more than 2,100 corporations.

In addition to the 235 companies that have programs, another 290 firms that are not presently involved in transportation responded to the questionnaire. Most of them indicated interest but stated that they have no immediate plans to establish commuter arrangements for their employees. The total response rate to the questionnaire was, therefore, 25 percent of the polled population.

[1]National Association of Van Pool Operators: Data presented at Sixth Annual Conference, April 27-29, 1982, Gatlinburg, Tennessee.

[2]C. Kenneth Orski, "Urban Transportation," in Jack A. Meyer (ed.), *Meeting Human Needs: Toward a New Public Philosophy*. Washington, D.C.: American Enterprise Institute for Public Policy Research, 1982, pp 258-271.

Chart 1: Years Program Began



Administrators of the new corporate programs tend to be enthusiastic about the benefits they provide: Almost 60 percent of them, according to the Board's survey, actively encourage other employers to establish commuter-transportation operations. Nearly half urge their own employees to use the mass-transit system, regardless of whether the firm has its own ridesharing methods. About 18 percent participate in cooperative programs, either with other companies or with local government.

The Mass-Transit Crisis

Public transportation is an enterprise serving far more than its primary function of carrying people to and from their desired destinations. It is a vital tool for urban development and revitalization, energy conservation, and environmental protection. It can save space in congested areas and help agglomerate economic activities in dispersed areas.

When mass transit was exclusively a private enterprise, it was seen as a way to raise land values; under government operation, it is used to promote downtown retail sales and jobs, and is itself a major employer. While helping to subsidize a variety of private interests—companies, employees, developers, shopping centers—public transit is also a voracious consumer of public subsidies. In spite of steadily rising fares, government disbursements accounted for 51 percent of all transit operating revenues in fiscal 1980 (16.6 percent federal, 12.2 percent state, and 22.1 percent local), or close to $3 billion. This does not include capital grants, which amounted to another $1.26 billion in 1980.[3] (The American Public Transit Association estimates that government capital grants actually totaled $2.8 billion in 1980.[4] The difference may be due to the fact that the federal statistics were derived from data submitted by a representative sample of public-transit systems—rather than from all systems.)

Perhaps because of its central importance to the economy, public transit—which consists of some 1,055 separate systems—has, for the past decade, been reeling under the same crisis afflicting cities in general. Mechanical breakdowns on new as well as older vehicles, increasing fares for deteriorating service, deficits that grow at nearly 20 percent a year,[5] strikes inconveniencing tens of thousands of passengers (and thereby exacerbating a trend of ridership decline), a pervasive sense of frustration and resignation among passengers who have no other mode of commuting—these are the parameters of the crisis, affecting systems in major, as well as smaller, cities.

While it can be argued that the crisis would be far more severe had it not been for the grants, research and other programs authorized by the Urban Mass Transportation Act,[6] this national commitment to public transit has been only partially successful—a not surprising result, observers say, in light of the structural causes of the crisis. Three factors are generally cited as contributing to the prevailing difficulties: the immense popularity of the automobile, which has drained off ridership; the federal highway and low-cost home mortgage policies designed to promote suburbanization following World War II; and the deepening fiscal problems of cities, which have led to disinvestment in transit maintenance.[7]

The above factors are closely interrelated. Mass production of the automobile opened the opportunity to develop residential communities (suburbs) considerably outside the central cities. Improved roads were promoted to accommodate the individually mobile travelers, as well as to encourage further car purchases. Hence, the formation of a powerful highway lobby and the creation of the multibillion dollar highway trust fund financed by federal excise taxes, primarily on fuel.

As the desirability and availability of suburban living helped push up the price of housing, returning veterans and others needed assistance in becoming homeowners. One response was federal subsidy of mortgage loans through the VA and FHA programs. With the building of suburbs and highways, middle income residents began

[3]U.S. Department of Transportation, *National Urban Mass Transportation Statistics: Second Annual Report*. Washington, D.C., June 1982, Table 1-14.

[4]American Public Transportation Association, *Transit Fact Book 1981*. Washington, D.C.: p. 29.

[5]Ronald F. Kirby, "Current Issues in Financing Public Transportation," speech before the Conference on Future Directions of Urban Public Transportation at Woods Hole, Massachusetts, September, 1982.

[6]For an evaluation of UMTA, see George W. Hilton, *Federal Transit Subsidies: The Urban Mass Transportation Assistance Program*. Washington, D.C.: American Enterprise Institute for Public Policy Research, 1974.

[7]Louis J. Gambaccini, New Jersey Commissioner of Transportation, *The Financial and Productivity Problems of Urban Public Transportation*. Hearings before Committee on Public Works and Transportation, 97th Congress, June and October, 1981, p. 7, ff.

Private-Sector Public Transport

"In the time before the private automobile, only a very few urban dwellers could afford personal transportation, and the good public transportation provided by street railways was an imperative to life in the cities.... Illustrative of the importance of street railways, for example, is urban ridership in 1917, when the average city dweller took 260 trolley rides a year.

"At its peak around the time of World War I, the urban street railway industry was a great and powerful one. In 1917, for example, there were over 1,000 street railway companies with an aggregate investment of over 4 billion dollars. These companies operated 60,000 streetcars over 26,000 miles of track. They carried nearly 11 billion passengers a year and generated annual revenues of some 600 million dollars."[1]

[1]William D. Middleton, "History of the Private Sector Role in Public Transit," unpublished speech before Transportation Research Board Conference, University of Virginia, August 8-11, 1982.

their much described exodus from the cities, taking with them their transit fares and tax dollars, and leaving behind municipal governments strapped for operating revenues.

Other factors have added to the crisis in public transit. Managers of transit systems have been called self-serving and profligate, "mediocre, often amateurish, and unstable."[8] To the extent that they operate a near-monopoly, they have been accused of taking their ridership for granted, thereby ignoring the need to aggressively market their service.[9] To deal with the relentless escalation of costs, they have been charged with operating on an assumption of limitless government subsidies. As one analyst commented, managers found it " 'unthinkable' for governments to let such [transit] service contract significantly, let alone disappear."[10]

The tactics of organized labor, which have pushed labor costs up to about 75 percent of transit operating costs,[11] are also frequently mentioned as a major contributor to the crisis. Among the highest paid public-sector service employees, transit union members maintain a monopoly situation given the near absence of competition. "Having begun as private employees, transit workers were organized and enjoyed the right to strike in most locales before they went public," one observer noted. "As the price for giving up the legal right to strike on entering the public sector, they typically obtained the right to binding arbitration on disputes."[12] With this authority, they went on to base their wage demands not in comparison to wages of other public-sector employees, but to the already higher wages of transit workers in other locales. This negotiating pattern, backed by a credible threat to strike, resulted in management concessions to wage increases that reportedly outpace inflation.

Thus, while the Consumer Price Index rose 14 percent between 1967 and 1980, transit wages went up 160 percent in that period.[13] A transit union's capacity to extract higher wages from a locality has been further enhanced by its veto power over the locality's acquisition of federal funds, according to critics.

Depreciation and investment tax credits, which encourage the purchase of new manufacturing plants rather than reinvestment in existing plants, may have also contributed to the relocation of industry outside the city and to declining ridership.[14] Federal design requirements for transit equipment, initially intended as a cost-saving technique by encouraging economies of scale, may have inadvertently forced up prices by making it difficult for smaller localities to obtain the necessary equipment, according to Ronald Kirby, a transportation expert at The Urban Institute.

Finally, technological development itself has been impeded by the enormous investment in existing facilties, and by the prohibitive cost—in congested urban areas—of securing new rights of way required by technological innovations.[15] "The fact is that the future of the American city is uncertain and changing, and the city is a risky setting for expensive and irreversible transport investment."[16]

The price tag for repair, modernization and new construction of public transit has been placed at $50 million (in constant 1980 dollars). This estimate does not include costs required by railroads for rolling stock (vehicles) and fixed plant—another $55.23 million.[17]

The Automobile Crisis

Largely responsible for the declines in ridership of mass transit, the private automobile today finds itself suffering from problems as serious as those afflicting its

[8]*Time*, March 30, 1981, p. 13; also Alan Altschuler, *Hearings*, June and October, 1981, p. 36.

[9]Ronald F. Kirby, Urban Institute, in discussion with author.

[10]Altschuler, *Hearings*, June and October, 1981, p. 35.

[11]*National Urban Mass Transportation Statistics*, Table 1-30.

[12]Altschuler, *Hearings*, June and October, 1981, p. 36.

[13]Arthur E. Teele, Administrator of UMTA, *Hearings*, June and October, 1981 p. 356.

[14]Gambaccini, *Hearings*, June and October, 1981, p. 13.

[15]E.O. Pederson, *Transportation in Cities*. New York: Pergamon Press, 1980, p. 61.

[16]Wilfred Owen, *Transportation for Cities*. Washington, D.C.: The Brookings Institution, 1976, p. 29.

[17]*Total Transportation Financial Needs During the Next Decade: 1981-1990*. Washington, D.C.: American Transportation Advisory Council, April 1981, pp. 7, 19.

public-sector counterpart. Plant closings, massive layoffs, rebate wars among the major manufacturers, and demands for protective legislation against foreign imports continue to dominate the headlines. And just as direct government subsidies have not stopped the crisis in public transit, so the indirect societal subsidies of the automobile—the cost of air pollution, accidents to health, life, lost time, property damage, and litigations which "has never been fully incorporated into the cost of driving"[18]—have not effectively shielded this mode of travel.

In 1981, sales of all new cars and of all domestic cars dropped 34 percent and 36 percent, respectively, below 1973.[19] Domestic production in that year fell to its lowest level in 20 years, utilizing less than 50 percent of factory capacity. At the start of 1982, the Administration grimly reported that at least half of the 214,000 automobile workers on indefinite layoff would probably never be rehired. As if to reinforce the Administration's prediction, the General Motors Corporation quickly announced the closing of an additional four plants and the layoff of some 60,400 workers—5,400 of them indefinitely. And a U.S. Commerce Department official stated that, even in the event of an economic upturn, there would be over a half million fewer automotive jobs in 1982 than in 1978.[20]

The picture was not much more cheerful as the year progressed. The Ford Motor Company, for example, reported a third-quarter net loss of $325.4 million—and that was considered an improvement over the same period the previous year. Even sales of diesel-powered cars—once the hoped-for answer to punishing hikes in oil prices—plunged 34 percent in 1982.[21]

Declining automobile sales and usage have exacerbated a related problem, namely, the financial difficulties of the interstate-highway system. According to the Congressional Budget Office, it would cost about $39 billion merely to complete the 26-year-old system. Sorely needed repairs and reconstruction would amount to another $46 billion.[22] In December, 1982, Congress passed a law to raise such funds by increasing the excise tax on gasoline from four cents per gallon to nine cents; it remains to be seen whether this increase will curtail automobile use, just as fare increases almost invariably precipitate a decline in mass-transit ridership.

While explanations of the reasons for the automobile crisis vary between management and labor—in particular, over comparative wage-benefit and productivity levels vis-a-vis foreign automotive workers—several broad causative factors are generally agreed upon. They include the 1973-1974 and 1979 oil-price hikes; high interest rates for auto loans; record unemployment; slippage of the dollar, especially in comparison to the Japanese yen; and foreign competition. Toward the end of 1982, for example, Japanese producers held almost one-quarter of the U.S. car market; by comparison, all foreign imports together amounted to only 6 percent of the U.S. market in 1965.[23]

But in the automotive industry, as in mass transit, knowing the proximate causes of a problem does not necessarily lead to a solution. Because both crises take place within a much larger global context—the economic straits of the industrial nations, the political volatility of the oil-producing region, etcetera—the domestic problems of both mass transit and the private automobile are expected to continue. Consequently, the traditional "transportation social contract" among employers, employees and government is being reexamined. "Low-cost, uninterrupted work-site access may not be as certain as employers once thought. Automobiles may not be as easily acquired and driven as employees once thought, and the public sector may not be able to afford the level of service it once provided. From all perspectives, the contract needs to be adjusted or perhaps completely renegotiated."[24]

The new corporate programs, which advocates say combine the strongest aspects of both traditional public and private transportation systems while avoiding or mitigating the inherent problems of each, represent a significant revision of the transportation social contract. They also reflect a further easing of the distinction between public and private sectors, or at least a recognition that standard economic categories are in a process of revision.

[18]Gambaccini, *Hearings*, June and October, 1981, p. 14.

[19]*Motor Vehicle Facts and Figures '82*, Detroit: Motor Vehicle Manufacturers Association, 1982, Tables pp. 14, 17.

[20]*New York Times*, January 5, 14, 16, 19, 1982.

[21]*Automotive News*, October 18 and November 1, 1982.

[22]Congressional Budget Office, *The Interstate Highway System: Issues and Options*. Washington, D.C.: U.S. Government Printing Office, 1982, p. 21.

[23]Donald E. Peterson, President, Ford Motor Company, in remarks before Society of Automotive Engineers, White Sulphur Springs, West Virginia, October 8, 1982.

[24]Milton Pikarsky and Christine M. Johnson, "Transit in Transition: A New Social Contract for Urban Mobility." *Economic Development Commentary*, October, 1981.

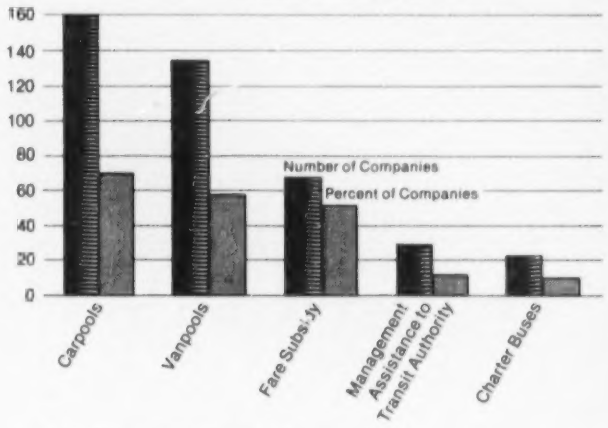
Commuter Transportation

Five basic employee-transportation programs are operated by the 235 corporations studied. (See Chart 2.) They are carpooling, vanpooling, subsidization of mass-transit fares, use of charter or subscription buses, and management assistance to local transportation authorities. Of these five, carpooling is the most widespread, active in 160 firms, or more than two-thirds of the responding companies. The next most popular is vanpooling, employed by 135 of the businesses, or more than 57 percent. Chart 3 presents a breakdown of programs by number and percent. (The absolute numbers exceed the total of 235, because most of the companies tend to be involved in more than one type of program.)

Beyond the five types of programs listed above, two other indirect functions related to transportation are employed by many of the firms to ease commuting. These are management's active encouragement of mass-transit use by employees, and work-time rescheduling—staggered hours and flextime—which affect a locality's traffic and transit systems. Finally, a number of companies engage in cooperative transportation projects with other businesses or local governments. These were listed as separate from the above programs.

Together, the corporate programs transport over 284,000 employees to and from their jobs every working day. (This figure does not include the commuters utilizing ridesharing programs operated by nonbusiness entities, such as government agencies, social organizations, religious groups, and so on.) See Tables 1 and 2.

Chart 3: Type of Transportation Program by Number and Percent of Companies*



* Most companies administer more than one type of program

Carpools

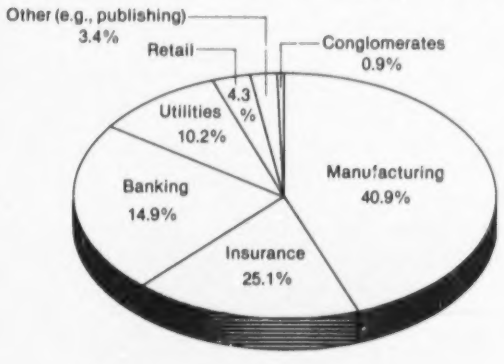
Perhaps one reason for the popularity of carpooling is that it is a very easy program to administer, and that relatively little initial investment is required by the corporation (see Exhibit 1, page 8). The primary function of the company is to match riders, usually with no more effort than helping an inquiring employee get in touch with co-workers who live in his or her vicinity.

Typically, an administrator will maintain an employee-card file containing names, addresses and phone numbers. Some companies simply use their preexisting employee-address cards for the purpose, others establish special cards for a separate carpool file (see Exhibit 2, page 9). The latter system would seem to insure a much higher percentage of people interested in participating.

In many cases, the card indicates whether the employee wants to be a rider only, a driver only, or both. Upon receiving a request for carpooling assistance, the administrator searches through the file for the appropriate cards, which are usually arranged by zip code, or requests an appropriate printout sheet from a data bank. It then becomes the responsibility of the employee to contact the other commuters and work out all details, including driving responsibilities, fee splitting, and the like.

In one western city, a major utility engages the free computerized carpool-matching service operated by the regional council of governments (see Exhibit 3, page 9). The firm reproduces the council's address-card format, but adds its own logo and company name. An inquiring employee then has access not only to the names of appropriate co-workers, but of commuters employed by other nearby firms in the city. Activities related to a matching operation usually include posting address cards in strategic locations, publicizing the program through employee media, and providing special parking privileges to carpool participants.

Chart 2: Primary Industry of the 235 Responding Companies*



* Percentages do not add to 100 due to rounding.

Table 1: Employees Transported by Corporate Programs (229 Companies Reporting)

	Companies	
Employees	*Number*	*Percent*
10-100	43	18.7%
100-200	22	9.6
200-400	24	10.4
400-800	23	10.0
800-2,000	23	10.0
2,000-6,000	22	10.0
6,000-22,000	9	3.9
Over 22,000	63	27.4

Table 2: Employees Transported by Corporate Programs (In Terms of Employees per Site)

Percent of Employees at Site Using the Program	*Percent of Companies*
Up to 10%	32.0%
11 to 20	25.0
21 to 40	22.2
41 to 75	13.8
76 to 98	7.0

Subsidizing Mass-Transit Fares

Nearly a third of the firms studied subsidize a part of mass-transit costs for their employees. Like carpooling, fare subsidization entails only nominal administrative costs, but the firm does not usually recoup any part of the actual subsidy in this instance.

Taking a cue from special gold-colored bus tokens issued to senior citizens, one New England manufacturing company approached the transit authority with the suggestion to make similar tokens in a different color for use by the company's own personnel. In turn, the firm would commit itself to purchasing a significant amount of these 35-cent tokens—$5,000 worth; it would then attempt to resell the tokens to its employees at half price. The authority agreed, and the program was an immediate success, with $8,000 to $9,000 worth sold that year, 1973, and each year following. "The fare has since gone up to 50 cents, and we went up with it," explained the firm's corporate office manager who conceived the idea and took the initiative in approaching the authority. Employees now purchase the tokens for 25 cents. Sales, however, are strictly limited. Workers who reside in a one-fare zone may purchase only one package of ten tokens per week; those who live in two-fare zones may buy two such packages. To further minimize administration problems and insure greater control, sales are conducted only one day a week. The annual cost to the company is around $12,000.

"We did it initially for several reasons," the manager explained. "Gasoline prices were increasing, energy conservation was important, we wanted to assist the locality's mass-transit system, and we wanted to contribute to the city's efforts to revitalize the downtown area by attracting more shoppers." The operation is especially popular with the firm's secretarial staff, which can now eliminate the daily $2.00 parking fee charged by most commercial lots.

Following the lead of that company, nine other companies—most of them large—in the same city now subsidize the fares of their employees in like manner.

Exhibit 1: Flyer on Carpooling Prepared by Utility Company for Employees

10 Tips to successful carpooling

(1) **Determine Your Route and Schedule.** Establish the morning pickup point(s) and designate a place(s) to meet for the trip home.

(2) **Draw Up a Schedule for Driving Responsibilities.** If all members of your carpool alternate driving, decide among yourselves if you want to alternate on a daily, weekly, or monthly basis.

(3) **Establish a Method for Reimbursing Driving Expenses.** If the members of your carpool do not share the driving equally, come to an understanding of how the costs will be shared and agree on payment dates.

(4) **Be Punctual.** Decide how long the driver is expected to wait. When home pickups are utilized, do not disturb everyone in the neighborhood by honking if a rider is tardy.

(5) **Establish Policies.** Smoking or nonsmoking; music and volume; eating or drinking. Your carpool will have a better chance for success if such possible irritants are discussed in advance.

(6) **Make Carpooling Serve One Purpose.** If it is for commuting to and from work, do not let it become a shopping or errand service.

(7) **Establish a Chain of Communication.** If a driver is ill, or will not be going to work one day, an alternate driver should be notified to ensure that other members of the carpool will have a ride. If a rider is ill or will not be working, the driver should be contacted.

(8) **Drive Carefully and Keep the Vehicle in Good Repair.** This includes keeping the vehicle clean and safe. There are others involved. There should be no excuse for excessive speed, use of alcohol, or reckless maneuvers while driving.

(9) **Do Not Feel You Have to Carry on a Conversation with Your Fellow Carpoolers.** This is particularly true in the morning, when some people like a time of quiet.

(10) **If You Lose a Member of Your Carpool, call**_____ for help in finding a replacement. Together we can all make ridesharing a pleasant money-saving alternative to expensive solo driving.

Exhibit 2: Carpool Card (An Insurance Company)

To: Employee Facilities

I am interested in:
☐ Carpooling from _____ (town)
☐ Vanpooling from _____ (town)

PRINT OR TYPE

Name

Address

Town Zip

Routing No.

Working Hours ____ to ____
Preference: Do you wish
a. To be rider only ____
b. Drive some of the time ____
c. Drive all the time ____

☐ I agree to have this information passed on to others

According to a spokesperson for the authority, the "Red Token Program" has resulted in a significant increase in ridership. Although one department store briefly experimented with handing out a free red token to customers making a $5.00 or greater purchase, the tokens are now distributed only through participating firms.

Of course, the amount of the subsidy varies with the firm, and may also vary with the locality's fare structure. One bank in a western city, for example, subsidizes its employees' fares from 25 percent to 100 percent, depending upon the distance each employee travels. Workers residing far from the bank office may have to take the regional bus, which charges $60 a month for its tickets; the bank pays $12 of that amount. Other employees who live nearby take what is known as a circulator bus, which charges only $12 a month. The bank's own $12 payment thus amounts to a 100 percent subsidy for them. Two other categories of buses charge intermediate fares; the corresponding subsidies are 50 percent and 33 percent.

Here again, administration is relatively simple. One ticket book per employee is sold on the last two business days of each month, and on the first business day of the following month. The highly popular program was recommended by the bank to the transit authority five years ago, and has since been instituted by other firms in the downtown area.

Assistance to Local Transit Authority

One out of every eight respondents indicated that they offer some form of assistance to a local transportation authority. Types of assistance include serving on areawide transit boards or task forces, conducting employee surveys for computerized metro-pool data bases, and providing technical expertise in developing and marketing alternative-fare systems for the locality.

The third largest bank in one southern city has formed an internal transportation committee that offers free services virtually on request to the municipal transit system. Consisting of vice presidents in charge of real estate, international banking, community relations, and media affairs, the committee proposed a revised fare and distribution program for the transportation authority, and has coordinated the participation of other banks in the city.

"The old fare system was not working very well," explained a member of the bank's committee. "Each ride was 85 cents—or a dollar if you didn't have the right change—and a dated monthly pass cost $30. If people bought the pass and didn't ride every day, they were throwing away money. And if they didn't have change,

Exhibit 3: Carpool Card (A Utility)

CARPOOL
MATCHING SERVICE

Please print clearly or type. Fill out completely.

NAME: _____
(last) (first)

HOME ADDRESS: _____

CITY: _____ ZIP _____

COMPANY NAME: _____

WORK ADDRESS: _____

CITY: _____ ZIP _____

Circle your work days:

SUN MON TUE WED THU FRI SAT

WORK HOURS: _____ A.M. _____ A.M.
(starting time) P.M. (quitting time) P.M.

TELEPHONE: _____
(circle one: work home)

DO YOU HAVE A CAR AVAILABLE? ☐YES ☐NO

I WOULD LIKE TRANSIT INFORMATION ☐

☐ I would like additional information about the company Van Pool program.

All information on this form is confidential and will be used for carpool matching only. Company cannot be responsible for its unauthorized use by persons with whom you are matched or by others. This form is presented in cooperation with the Regional Council of Governments. All forms will be submitted to the RCG for matching services.

FOR ADDITIONAL INFORMATION CALL
COMPANY RIDESHARE COORDINATOR
TELEPHONE EXTENSION
RETURN ALL FORMS TO
HEADQUARTERS OFFICE BUILDING

Exhibit 4: How an East Coast Municipal Transit Authority Appeals to Corporations

INTRODUCING A BENEFIT THAT'LL GIVE YOUR EMPLOYEES A LIFT.

The Bus Card. A new monthly discounted one-zone card from NJ TRANSIT that makes getting to work more convenient and more economical for your employees.

Now you can offer this extra benefit without additional cost to your company.

It's simple. Every month you receive the bus cards on consignment. You then sell the cards to bus riding employees. They will not only be able to use The Bus Card to get back and forth to work, but they'll be able to use it for unlimited rides in a one zone area during the entire month.

As an added incentive, you can pass along additional savings to your employees by absorbing a percentage of the cost yourself. You'll be creating better employee morale. You'll be more socially responsible by conserving energy. And you'll be helping reduce pollution.

To see how The Bus Card will really give your employees a lift, contact John Mancini, (201) 648-7385, NJ TRANSIT, Marketing Department, P.O. Box 10009, McCarter Highway and Market Street, Newark, NJ 07101.

NJ TRANSIT

they wouldn't get on the bus. Mass transit was really hurting, and the resulting traffic jams were becoming intolerable."

The committee then proposed developing a coupon book, usable for an indefinite period of time, to be sold to the public through every branch of each bank. The authority agreed, and the committee proceeded to secure the cooperation of the other banks. "Our corporate philosophy is to take a high profile, be very active in the community," explained the spokesperson. "We serve as a corporate peer; the transit authority or the mayor can point to us as a way of influencing other business involvement." He added that, aside from helping to ease traffic congestion, the bank's activity is excellent public relations. "After all, we are competing with two other banks."

Other companies providing assistance include a manufacturing firm in an east-coast city, which authorizes its managers to conduct seminars and serve on governmental transit commissions; and a New England utility that sends its environmental-affairs staff manager around the country to actively promote ridesharing.

Charter or Subscription Buses

Only a tenth of the firms surveyed indicated that their program consisted primarily of charter or subscription

Exhibit 5: Vanpool Program Flyer

History:

In 1974, following the first fuel crisis, we started our vanpool program with a single pilot van. Since July, 1974, we have added nine vans to our program. Our ten vans serve headquarters employees residing in Brewster, Danbury, New Fairfield, New Jersey, New Milford, Newton, Stratford and Westport.

Procedure:

(1) An employee interested in forming a vanpool contacts the headquarters coordinator for the program. We identify employees living in the area from a home address printout and attempt to interest them in vanpooling by personal contact, through the Headquarters News, and through our ridesharing bulletin board in the Employee Lounge.

(2) When there are ten interested individuals plus a coordinator-driver, approval is sought from the company to proceed.

(3) The coordinator-driver draws up a Memorandum of Understanding for his group. It names the alternate driver(s), indicates the pickup points, the time schedule, the estimated monthly payment, etcetera. Copies are distributed to all interested parties for review.

(4) A meeting is scheduled to enable all participants to meet; discuss any concerns; explain the company's role; and to make certain they understand and agree with their coordinator to the terms and conditions that have been defined in the Memorandum of Understanding.

(5) At the conclusion of the meeting, if all parties are still interested and commit themselves by signing a copy of the Memorandum of Understanding, the wheels are set in motion to purchase the van.

(6) At this juncture, the coordinator-driver signs a Letter of Agreement with a representative of [company] indicating he will act as coordinator-driver for the group.

How Costs are Determined:

[Company] buys the van and the cost is spread over a 48-month period. For example, if the vehicle cost is $10,600, the purchase cost factor equals $220 per month. Added to this is cost for insurance. In 1980, the annual premium cost is $480 per vehicle. Dividing this by 12, the monthly cost becomes $40.00. Adding these together, monthly payment to the company is $260.

The coordinator then determines his operating costs, allowing for the accumulation of contingency funds, and arrives at the monthly charge per rider. These monthly charges may fluctuate, up or down, at the discretion of the group, based on actual experience. The coordinator is a nonpaying member.

buses. In brief, such a program generally entails leasing or purchasing one or more buses (school buses tend to be popular with associations; construction buses are also used). Administrators also secure a trained, licensed driver, establish routes, and insure compliance with—or obtain exemption from—local regulations governing the use of mass-transit buses. According to the U.S. Department of Transportation, the major advantage of buying a bus is one of cost control, as leasing can be expensive. One of the major disadvantages of purchasing is administrative encumbrances.

Vanpooling

Probably the best known of the corporate transportation programs, vanpooling is administered by over 57 percent of the responding companies. As noted in the introduction, the number of vanpools in use by business and nonbusiness entities has grown enormously during the past decade. Annual conferences held by the National Association of Van Pool Operators (NAVPO) now attract vanpool operators from Mexico, Canada and England as well as the United States, and offer a wide array of technical workshops—state legislation, automotive innovations, marketing techniques, employee participation, and so on.

Several major companies have prepared "how to do it" kits, and at least one major insurance firm has developed a widely shown slide presentation. That company also offers van-driver-education classes. The U.S. Department of Transportation funds a considerable amount of research and demonstration van pool projects, and the U.S. Department of Energy has prepared several relevant vanpooling studies. (See appendix for corporate and government sources.)

Types of Vanpools

Company-purchased, leased, third-party, and owner-operated vans are the four types of vanpool programs employed by the firms. Of the 135 companies using vanpools, two-thirds conduct them with vans purchased by the firm itself, sometimes in combination with the other three forms. Another quarter of the programs utilize leased vans, again either by themselves or in some combination. The use of third-party vanpools—independent ridesharing services—accounts for 16.3 percent, and 12.2 percent are owner-operated, which means that the vans in the programs are owned by the respective drivers. The bulk of the owner-operated vanpools is used in conjunction with one of the other forms, whereas the bulk of the company-owned vanpools tends to have limited participation by the other forms.

The benefits of each type of vanpool operations will vary with the firm, and will depend on such factors as the number of of vans to be used, the desired level of administrative involvement (which includes maintenance responsibility), the cost of leasing versus owning over a period of time, and the like.

Fares

While some of the vanpool programs leave fare calculations to the driver, particularly in owner-operated pools, most devise a formula consisting of the monthly operating and fixed costs of the van, divided by the number of passengers (sometimes excluding the driver). The resulting figure may then be decreased by whatever amount, if any, the company wishes to subsidize (see Exhibits 6 and 7). Most firms tend to absorb administrative and overhead costs, estimates of which range between $2,000 and $20,000 annually for major firms.[11]

Examples of fare-computation formulas given by respondents include:

- "Fixed cost of vans minus the salvage value, minus a five-year depreciation cost, plus insurance and registration fees, plus a variable cost that includes estimated maintenance and gasoline charges."
- "Cost of vehicle, plus operating costs, less tax rebates equals monthly cost."
- "Round-trip miles per day times an average 21 days per month equals round trip miles per month, times a variable cost of $0.18 per mile equals the variable cost per month. This variable cost plus a fixed monthly cost of $164.28 equals the total monthly cost. That figure, divided by the number of passengers, equals the fare."
- "The firm subsidizes the total costs of the van program by approximately 25 percent. Total costs include all mileage-related operating costs as well as depreciation, interest, insurance and license. Vans are depreciated six years or to 100,000 miles, whichever is first. Our fare schedule is divided into different zones according to round-trip mileage, and is based on a ridership level of ten paying passengers."
- "Mileage rate is calculated to recoup the purchase price of the vehicle (minus a 10 percent investment tax credit and an assumed percent for salvage value), as well as projected maintenance cost over the life of the van (five years or 75,000 miles)."
- "Leased cost plus operating cost divided by number of passengers, based on a 21-day month."
- "Total costs divided by number of passengers. The driver rides free, and the backup driver pays three-quarters of normal passenger fare."
- "Riders share equally in monthly leasing cost of vans, plus proportionate share of operating costs based on number of miles."

[11]U.S. Department of Transportation, *How Ridesharing Can Help Your Company; A Manual for Employers*. Washington, D.C.: May 1980, page 39.

(text continued on page 14)

Exhibit 6: Vanpool Cost and Fare Calculation

		Sample	Your Van
A	**Calculate the monthly fixed cost of a purchased vehicle**		
1	Cost of the van	$11,000	
	Less salvage value (after 4 years)	- 3,300	
	Equals depreciable value	7,700 or	$160/month
2	Add other annual expenses:		
	License, registration, taxes	120	
	Insurance	+ 460	
	Equals other fixed expenses	$ 580 or	+ 48/month
3	Monthly fixed cost (items 1 plus 2 above)		208/month
4	Add optional maintenance contract		+ 45/month
	Total monthly fixed cost		**$253/month**
B	**Or calculate the monthly fixed cost of a leased vehicle**		
1	Start with your monthly leasing cost		$240/month
2	Add maintenance contract (if not in lease)		+ 45/month
3	Add insurance (if not in lease)		+ 40/month
	Total monthly fixed cost		**$325/month**
C	**Calculate per mile operating costs for purchased and leased vehicles**		
1	Start with the cost of gasoline ($1.10/gal ÷ 10 mi/gal) If you included a maintenance contract on A or B, gas is your only per-mile cost. Otherwise:	$0.110/mile	
2	Add the cost of oil change, filter and lubrication	0.005/mile	
3	Add other maintenance cost	0.025/mile	
4	Tire costs over the life of the van	0.010/mile	
	Total operating cost/mile	**$0.15/mile**	
D	**Calculate passenger fares**		
1	Start with each van's daily round trip distance	50 miles	
2	Multiply this by your average number of workdays in a month	x 21 = 1,050 miles	
3	Multiply this by your per mile operating cost from C	x $0.15 = $157/month	
4	Add the van's monthly fixed cost from A or B	+ $208 = $365/month	
5	Divide this cost by your break-even number of passengers	÷ 9 = **$40/month**	

Source: Vanpool Implementation Handbook, U.S. Department of Energy 1979, amended 1980.

From U.S. Department of Transportation, *How Ridesharing Can Help Your Company*, Washington, D.C. May 1980.

Exhibit 7: How One Utility Calculates Vanpool Fares

VANPOOL FARE CALCULATION WORKSHEET

A	**Assumptions**		
	1	Life expectancy (Van)	_____Years
	2	x Working days per year	253
	3	= Total trips	____trips
	4	Operating cost	____Cents/mile
	5	Registration cost (x yrs.)	$_____
	6	Insurance cost (x yrs.)	$_____
B	**Calculation of Trade-in Values**		
	1	Round trip miles per day	_____miles
	2	x no. trips =	_____miles
	3	x 1.01 (1% maintenance allowance) =	_____miles
	4	x 1.10 (10% personal mile. allow.) =	_____miles
	5	Rounded to nearest 5,000 miles	_____miles
	6	Yields trade in %	_____%
	7	x Basic purchase price (no tax or reg.)	$_____
	8	= Estimated trade-in value	$_____
C	**Calculation of Investment Tax Credit**		
	1	Basic Purchase Price (B-7)	$_____
	2	Plus 5% sales tax =	$_____
	3	1 year registration fee =	$_____
	4	Total (C-2 + C-3)	$_____
	5	x 10% ITC (C-4	$_____
D	**Calculation of Time-Factor Costs**		
	1	Purchase price + sales tax (C-2)	$_____
	2	_____year registration (A-5)	$_____
	3	_____year insurance (A-6)	$_____
	4	Sub-total	$_____
	5	Less ITC (C-5)	$_____
	6	Less trade-in value (B-8)	$_____
	7	Total time-factor costs	$_____
E	**Calculation of Distance-Factor Costs**		
	1	_____year round trip mileage (B-3)	_____miles
	2	x Operating cost (A-4)	____Cents/mile
	3	= Total distance-factor costs	$_____
F	**Fare Calculation**		
	1	Total time-factor costs (D-7)	$_____
	2	Total distance-factor costs (E-3)	$_____
	3	Subtotal; total cost to passengers	$_____
	4	Adjustment, if applicable	$_____
	5	÷ Number of months (A-1)	_____months
	6	= Monthly revenue objective	$_____
	7	÷ Number of paying passengers	_____
	8	= Monthly FARE per passenger	$_____
G	**Calculation of the Amortization**		
	1	Total time-factor costs (D-7)	$_____
	2	÷ Number of months (A-1)	_____months
	3	= Monthly amortization (includes insurance)	$_____

(text continued from page 11)

Establishing the Program

A major oil company, which presently operates a fleet of 294 vans in 18 cities—transporting over 3,300 employees for an average round-trip commute of 50 miles—suggests a five-step plan for the establishment of a vanpooling operation. The steps are:

(1) Create a task force to visit an existing operation elsewhere, and then explore such issues as local taxes, legal restrictions, insurance availability, etcetera;

(2) Recommend to the CEO establishment of a small-scale pilot project;

(3) Select an administrator who would canvass employees to determine interest, calculate fares, develop policies, prepare informational materials, and make other arrangements;

(4) Buy or lease the vans, secure maintenance service, interview potential drivers;[25]

(5) Monitor the pilot project to determine its success or failure, and make appropriate recommendations to the CEO.

Indirect Programs: Flextime, Staggered Hours, Transit Advocacy

Two efforts to ease public traffic congestion and transit peak/off-peak hour imbalances are used by almost half of the firms. Flextime schedules, which permit employees to moderate their own working hours, are employed by a quarter of the companies; staggered hours, under which workers start and leave work at intervals rather than all at once, are used by one in ten.[26]

Some of the firms utilize both types. Encouragement of mass-transit use is another indirect, if minimal, way corporate management has become involved in commuter transportation. Forms of encouragement usually consist of brochure distribution and sign posting. (Fare subsidization, discussed earlier, is, of course, a direct program.)

Costs

As indicated earlier, the administrative and overhead costs of the programs tend to be absorbed by the firm. They are difficult to ascertain with precision, because the cost-incurring operations are usually performed by existing employees utilizing equipment, space and procedures already in place. The concrete costs—fare subsidies, vehicles, subscription bus fees—vary dramatically: from a low of about $250 for a small business, to a high of $5 million for one of the country's largest vanpool operations. But even that latter figure is misleading, since the recoupment by that firm is 75 percent.

Only 87 firms, or 35 percent of the respondents, provide annual operating cost data. Of these, about 40 percent spend up to $25,000; a quarter spend between $25,000 and $100,000; and the rest spend over $100,000. (See Table 3, below.)

Actual expense to the firm, however, can be minimal. Over two-thirds of the companies responding state that they get back between 75 percent and 100 percent of their nonadministrative expenses, and over a third recover the full amount. (See Table 4, p. 15.) These are the points stressed by many corporate ridesharing advocates: The firm need pay little or nothing; employees save in terms of gasoline, fares, parking fees, the price of a second automobile and other expenses connected to a single-occupancy vehicle driving; and the public saves in terms of energy, pollution abatement, and so forth. The argument is: "Everybody wins."

Asked how they regain their costs, 111 firms, or over 47 percent of the responding companies, charge commuter fares—around half of them through direct cash, two-fifths through payroll deductions, and the rest via a combination. Tax credits and depreciation on vehicles are two other recoupment devices, used respectively by 15 percent and 12 percent of the firms.

Administration

The personnel department appears to be the staff unit most often charged with administering a transportation

Table 3: Program Costs

Estimated Annual Costs for All Types of Programs (87 Companies Reporting)

Cost	*Percent of Companies*[1]
Up to $25,000	46.1%
$25,000 to $50,000	5.5
$50,000 to $100,000	18.0
$100,000 to $200,000	12.2
$200,000 to $600,000	10.0
Above $600,000	5.5

Fare Subsidies (42 Companies Reporting)

Cost	*Percent of Companies*
Up to $10,000	33.6%
$10,000 to $20,000	26.2
$20,000 to $40,000	9.6
$40,000 to $100,000	12.0
$100,000 to $300,000	14.4
Above $300,000	4.2

[1]Percentages do not add to 100 due to rounding.

[25]For a fuller discussion of flextime, see Harriet Gorlin, *Company Experience with Flexible Work Schedules*, The Conference Board, Research Bulletin No. 110, 1982.

Table 4: Costs Recovered (94 Companies Reporting)

Percent Recovered	Percent of Companies[1]
Up to 25%	6.4%
26 to 50	11.8
51 to 75	17.1
76 to 100	65.0

Note: A little over 35 percent of the firms recover 100 percent of their costs.

[1]Percentages do not add to 100 due to rounding.

program, probably reflecting the origins of the program as an employee benefit or service. According to the survey data, half of the programs are operated by the personnel function, with a small group administered jointly by personnel and another functional unit.

About a tenth of the companies have established a special division to handle program details. The remainder of the programs are run, in declining order, by the following departments: transportation, plant and building, fleet and office services. Only 1.3 percent of the programs are operated entirely by the employee participants, and an even smaller percentage by a company's engineering division.

Almost two-thirds of the programs function on the day shift, and the other third serves both day and night work shifts. Programs seem to be popular with all categories of employees, from blue-collar workers to management. The most numerous participants tend to be office workers; almost 90 percent of the programs are used by them. This high percentage may reflect that nearly half of the firms responding to the survey were insurance companies, banks, and retailers—all labor-intensive industries employing a high percentage of clerical workers.

The extent of administration, again, will depend on a number of factors, primarily how much responsibility management wants to assume. Regardless of the degree of this involvement, however, all programs require certain responsibilities by the participants. For example, pool riders are expected to be at the pickup station on time, and drivers are often instructed to wait no more than two minutes. Passengers are also expected to inform the driver when they will not be riding, and are usually prohibited from subleasing their seats unless the plan specifically allows for such an arrangement. Substitute riders may pay a slightly higher fare. Refunds for absences are not popular. (See Exhibit 8.)

Perhaps the most important aspect of any program's administration, judging by the responses, is its flexibility, particularly in vanpooling programs. Such issues as routes, smoking regulations, driver alterations, pool formation, courtesy pickups, and so forth tend to be arranged according to the needs of the riders. As those needs change over time, usually accompanying increased participation, operating procedures will require a fair degree of flexibility if the pool is to continue. In fare subsidization programs, management flexibility becomes an issue when mass-transit fares increase; a decision must be made on continuing or altering (up or down) the percentage of subsidy.

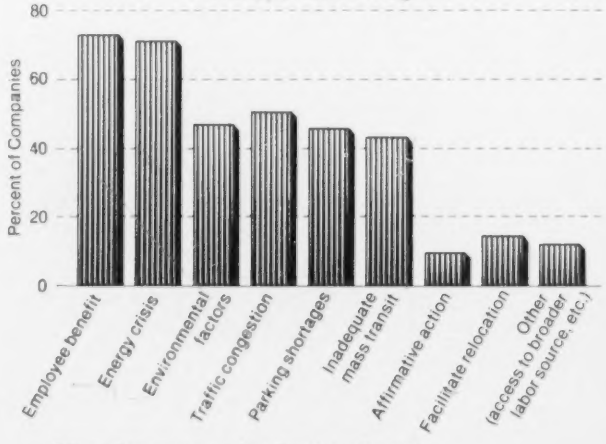
Why Programs Were Established

According to much of the literature on paratransit, it was the energy crisis precipitated by the drastic OPEC (Organization of Petroleum Exporting Countries) oil-price hikes in 1973-1974 and in 1979 that served as the major impetus for decisions to establish a transportation program. This finding is borne out by the survey data, as three-quarters of the firms indicated that reason as a prime incentive for undertaking their projects. However, the energy crisis does share the spotlight with another motivation—the desire to provide an employee benefit—which was cited by 72.8 percent of the responding firms.

Almost all of the companies, incidentally, cited more than one major reason. In addition to, or apart from, the above two factors, about half the firms were motivated by the following: environmental considerations such as air pollution, traffic congestion near the worksite or in corridors leading to the site, a shortage of parking facilities, and inadequate mass transit. (The relative percentages appear in Chart 4, below.)

Two other reasons—affirmative action or the provision of transportation to and from minority residential areas, and the desire to facilitate plant or headquarter relocations—were also cited by several of the respondents. A small minority of the firms also mentioned some additional factors, such as the desire to assist

Chart 4: Primary Reason for Starting Transportation Program*



*Almost all companies reported more than one primary reason.

Exhibit 8: Company Van Plan—A Voluntary Program

VAN DRIVERS

Selection

(1) Drivers will be selected by the Fooling Task Force, following receipt of a written recommendation by their supervisor.
(2) Drivers must be reliable, have a very low incidence of absenteeism, do very little company-imposed travel, and have a safe and clean driving record, as indicated by an absence of highway violation "points" on the drivers license.

Responsibilities

(1) The driver is key to the successful operation of the van and is completely responsible for routing, pickup points, scheduling, passenger lists, and operating cost.
(2) Driver must develop a list of minimum of ten passengers, and a waiting list of several more, all company employees, for Task Force review. Should the van load drop below the minimum of ten passengers, the driver must replenish the pool within 30 days.
(3) Drivers are responsible for keeping the vans clean inside and out, for all maintenance and service requirements, state-required inspections and licensing, and all operating costs.
(4) Supply a secure place for "at home" parking of the van, preferably in a locked garage.
(5) Both driver and co-driver should be prepared to bring passengers to work in personal cars in case of van failure; they will be reimbursed at their van's daily rate.

Operation

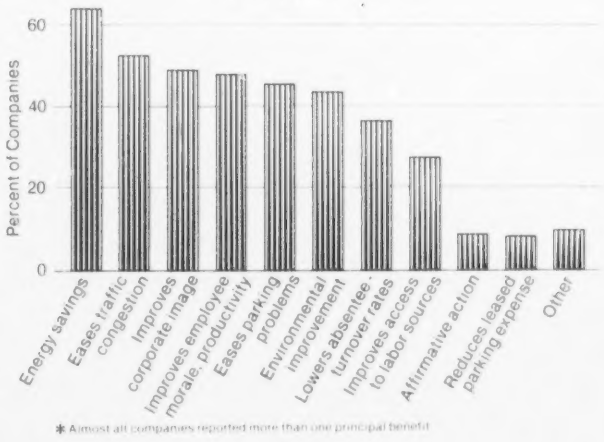
(1) Operation of the unit is permitted only by the driver-coordinator and backup drivers. Only under emergency conditions will any other person be permitted to operate the vehicle. In this connection, in the absence of both the driver-coordinator and the backup driver, any company employee that is a member of the vanpool may operate the van for pickup and delivery of passengers to and from work if he or she is authorized to do so by the driver-coordinator and is properly licensed.
(2) Safe courteous driving habits, consistent with complete observance of all traffic regulations are of the utmost importance. Any citation resulting from a moving traffic violation while driving the van is a responsibility of the driver-coordinator and/or backup driver. The driver-coordinator and/or backup driver agrees to report to the company any citation resulting from a moving traffic violation, whether committed while driving the van or any other vehicle.

downtown revitalization efforts, government requirements or mandates, and a technique to attract employees.

Principal Benefits

If the energy crisis was one of the reasons most often cited for beginning a commuter-transportation program, it was also the most commonly cited principal benefit—over two-thirds—of continuing the program. Other significant benefits, according to the survey, were reduced traffic congestion, an enhanced corporate image in the community, a more efficient use of the parking area, improved employee morale (which it is believed translates into higher productivity), and improvements in the quality of the environment. Fewer companies cited the following benefits: lower employee absenteeism or lateness, access to a broader labor source, affirmative action (transporting employees living in minority neighborhoods) and a savings in leased parking expenses. (See Chart 5 for breakdown.)

Chart 5: Principal Benefit*



* Almost all companies reported more than one principal benefit

Promoting the Transit Program

The most common form of promoting the program to employees consists of describing it in company newsletters and staff memos. Four-fifths of the firms with programs use this method, often exclusively. Newsletter essays either tend toward the very factual—describing operating procedures, routes, fares, responsibilities—or they are conversational, with a good deal of human-interest appeal. Exhibit 9 on page 17,

Exhibit 9: Article on Vanpooling from Employee Newsletter

Confessions of a Reformed Commuter

A year and a half ago we formed a van pool to Kenilworth. I was halfhearted about it; I think we all were. We all like the freedom of four wheels to call our own; and most of us resist more structuring, more organization on our already well-structured, well-organized lives. From the moment we reach for the morning toothbrush until the moment we turn off the late news and set the wakeup alarm, it strikes each of us that our day has been completely structured, completely organized. It's small wonder we all cherish unstructured time—a rare evening with no P.T.A., no report to be compiled, a Saturday afternoon just watching a ball game, or playing in one. This is why the American work force jealously guards commuting time. We all *have* to get there, but *how* we get there is ours to decide—unstructured time—in a time-structured world, a freebie.

I hadn't been a member of the van pool for two weeks when I discovered the flip-side of the structured commutation coin—not surprisingly, quite literally, *coins*—nickels, dimes and quarters that were no longer aimed at Parkway toll baskets, but weighted my wallet instead. Trips to the gasoline station became infrequent; and as time went on, the monthly statements from my favorite oil companies became modest.

There were other surprises: The tires of my car took on a rested look. Then the windshield wiper blades began to look rested. Finally, even the upholstery began to look rested; and it dawned on me the carburetor, distributor, the transmission were all getting a nice rest too. The chronological age of my car doesn't mean much anymore. Its youth is proclaimed on the dashboard—low, low mileage. To van poolers our cars have the look of cars that will be around for a long time.

There are other benefits. It's nice to sit back and leave the driving to someone else. (The drivers, of course, are the *real* heroes of the Program.) It's nice to study the Dow Jones rather than a tailgater in the rear-view mirror, read a who-dun-it rather than the bumper stickers, window stickers, and license plates of hundreds of cars up ahead. It's pleasant to fall asleep in a traffic tieup instead of fuming. It's good to forget about driving altogether and just look at the New Jersey roads, trees, houses, clouds, all in moving Panavision.

The strangest benefit of all was unforeseen—I feel better about myself. I felt guilty when I was driving my own car to the office every day, guilty because I was not helping the national conservation effort in any way. I don't feel that way anymore—*how about you*?.

reprinted from a New Jersey manufacturing company's newsletter, is an example of the latter type. Written in a humorous vein by a vanpool participant, the article describes the author's initial hesitation based on the supposed freedom of "four wheels to call [his] own" and a resistance to any more "structuring" of his life. It goes on to describe the steady change in his attitude as he discovers the various benefits of vanpooling—from more coins in his pocket to the freedom to "fall asleep in a traffic tie-up instead of fuming."

All other promotional methods combined—public announcements and advertisements, staff meetings particularly for new employees, and audio visual productions, among others—are used by a little over half the firms. Examples of some of the methods include: brochures (see Exhibit 10, p. 18), manuals containing administrative and cost computation information, ridesharing surveys, placement of large maps and ridesharing routes in public access areas like cafeterias and hallways, articles in the mass media, company logos or signs on the vans or other program vehicles, and word of mouth.

Manuals tend to be fairly extensive, explicit, and clearly written. One firm's operations manual, prepared in loose-leaf form for easy alterations, has sections dealing with virtually every aspect of the operation. (See the manual's table of contents, Exhibit 11, page 19.) Each section has step by step instructions, exemplified by the following page entitled "Maintenance Performed by Driver":

"For convenience purposes, as well as to help cut program costs, the driver may choose to perform the following items:

(1) Change oil and filter. Driver will be reimbursed $4 labor plus cost of six quarts oil and filter.

(2) Lube chassis. Driver will be reimbursed $2 labor plus cost of the grease.

"*To request reimbursement*, driver fills out 'Request for Reimbursement' form, attaching receipts and an itemized statement of parts and labor charges. Vendor's statement must provide odometer reading and van number."

See Exhibit 12, on page 20, the company's guide to preventive maintenance.

Another firm operating a large number of vanpools at numerous sites has prepared a complete kit on different

Exhibit 10: Employee Brochure

GENERAL

The primary objective for implementing a Company Vanpool program is to conserve energy resources by reducing the number of vehicles commuting to and from work. This program also provides employees an economical alternative for commuting to and from their work location.

WHAT IS A VANPOOL?

An employee vanpool consists of 14 employees who live in the same geographical location and work at the same facility. Also available are Commuter Vehicles accommodating 10 and 12 passengers.

HOW IS A VANPOOL ESTABLISHED?

Routes are established by the Vanpool coordinator to accommodate the paying passengers and a driver in geographically convenient areas. A minimum number of passengers will be required. One employee must agree to be the primary driver with a *minimum* of two employees agreeing to be back-up drivers.

WHO IS ELIGIBLE TO JOIN?

All regular, new normal and part-time employees; however, new normal and regular employees who will be riding in a van five days a week will have priority. Intermittent and contract employees may ride *only* with approval from the Commuter Center.

WHO DRIVES THE VAN?

A Company employee who has been trained by instructors and is in possession of a valid California Class 2 driver's license. The driver rides free; the back-up driver(s) rides free only when he or she drives.

HOW DO I PAY?

All regular, new normal and full-time temporary employees' fares are handled through Payroll Deduction. All others pay by check payable to the Company for those days they ride.

WHAT ARE THE RATES?

The minimum fare for participation in the Vanpool program will be based on the roundtrip mileage of 40 miles.

Roundtrip Mileage	Bi-weekly Rate
0 — 40 miles	$24.00
41 — 60 miles	28.00
61 — 80 miles	31.00
81 — 100 miles	35.00
101 — 120 miles	38.00
121 — 140 miles	42.00
141 — 160 miles	46.00

DO I PAY WHEN I DON'T RIDE?

Yes. Fares will not be reduced to allow for sick leave, vacation, or other absences; however, a participant may lease his/her space during an absence to another employee. *NOTE:* A participant who is required by the company to provide his/her own transportation may be eligible for reimbursement of the daily vanpool cost. Refer to the *"Vanpool Policy and Procedures Guide."*

WHO IS RESPONSIBLE FOR SERVICE AND MAINTENANCE OF THE VANS?

The Automotive Services Department. All service, including gassing, maintenance and washing is performed at the facility where the van is based.

WHAT HAPPENS WHEN A VAN BREAKS DOWN ENROUTE?

When the Commuter Center is notified of a van breakdown, a backup van is dispatched to enable the passengers to complete their trip with minimum delay.

HOW DO I JOIN A VANPOOL?

Any employee interested in joining a vanpool should obtain a registration/questionnaire form from the EMPLOYEE COMMUTER CENTER.

aspects of its operations, which it has distributed to the public. The kit contains a brief fact sheet, photographs, information on beginning the program, cooperative agreements between the company and the driver, vanpool economics, service schedules, and driver documents (logs, passenger lists, revenue and mileage reports, anticipated absences).

A large brewery in a western city has prepared an attractive, four-page full-color brochure, sporting a large photograph of the company's van and its smiling ridesharing employees. The two inside pages contain illustrations and descriptions of the benefits and techniques of the firm's ridesharing programs, with several telephone numbers for additional information.

Beyond the use of informational materials, many companies offer special incentives to their employees to participate. The two most common are the provision of free rides for the drivers (and sometimes backup drivers), and permission for the driver to retain use of the van on weekends or after working hours. Just over half the programs offer free rides, and almost 40 percent offer van retention. A small number of companies (5.1 per-

Exhibit 11: Contents Page from Ridesharing Operations Manual (A Utility)

COMMUTER POOLING OPERATIONS MANUAL

100 INTRODUCTION
- 100-1 Purpose
- 100-2 Overview
- 100-3 Program Organization

200 DRIVERS
- 200-1 Primary Driver
- 200-2 Temporary Change in Primary Driver
- 200-3 Backup (Alternate) Drivers
- 200-4 Emergency Drivers
- 200-5 Combining Vanpools
- 200-6 Swapping Vans

300 PASSENGERS
- 300-1 Priority
- 300-2 Responsibilities

400 MAINTENANCE
- 400-1 Warranty Work
- 400-2 Special
- 400-3 Preventive
- 400-4 Performed by Driver
- 400-5 Tires
- 400-6 Independent Accounts
- 400-7 Backup Vans

500 MILEAGE REPORTS

600 EMERGENCY CARPOOLS

700 INSURANCE
- 700-1 General Coverage
- 700-2 Accident Reporting Procedure

800 MAILING LIST

900 FARES
- 900-1 Annual and Hourly Salary Employees—Payroll Deduction
- 900-2 Non-Co. and Hourly Employees (Other than Hourly Salary Policy)
- 900-3 Route Changes
- 900-4 Vans Commuting 7 Days Per Week
- 900-5 Submitting Revenue Payments
- 900-6 Reimbursements for Outages
- 900-7 Reimbursements for Shift Changes, Overtime

1000 CREDIT CARDS

1100 SMOKING/ALCOHOL

1200 FLEXITIME SCHEDULES

1300 VAN ACCESSORIES

1400 PARKING

1500 CITY, STATE, FEDERAL LAWS

1600 RIDESHARING CENTERS

cent) allow drivers to keep a portion of the fare. This figure might increase if the additional money to the driver was excluded from income taxation, according to a number of administrators. The other generally accorded incentive is parking privileges provided to pool operators.

Problems

Employee apathy is, by far, the problem most commonly encountered by companies seeking to establish or operate a commuter-transportation program. (See Chart 6, page 21.) Nearly two-thirds of the administrators cited this issue, compared with only a fifth citing the next most common problem—administrative difficulties. One large bank in San Jose described it this way: "Employee apathy in this area is tremendous and difficult to overcome. For example, a five-question survey dealing with commuter patterns appeared in [our] monthly newsletter, with a request to return. The response was 14 out of 1,200, or 1.2 percent. Another questionnaire concerning vanpooling received the same response rate."

A security manager for a northwestern manufacturing company explained: "We employ approximately 1,300 individuals at our main site. In recent years, we have tried various employee transportation programs, including subsidy of the major portion of expense of a bus service for employees. All attempts have been less than enthusiastically received. Lack of interest is primarily due to the general rural makeup of the majority of employees combined with our necessary multishift work schedule."

Another executive commented: "For about one-and-a-half years, during 1980-1981, we offered the following incentives at three of our local facilities: (1) Any employees who carpooled on a regular basis were eligible to enter a quarterly drawing. The winner received a $100 credit-union savings deposit; (2) Any employee who rode the bus regularly could receive one-half the price of a monthly transit pass from the company; (3) We made Ride Share material available to all employees and publicized the services that Ride Share offers." Incentives were discontinued in 1982, according to the executive, because of employee apathy, shift rotation, and inconvenient bus services.

Even among the 290 companies that have no programs, almost a fifth said they do not plan to start any because of employee apathy (see Chart 7, page 21). Some of those firms said that the leveling off of gasoline prices is a contributing factor to apathy.

Examples of administrative problems encountered by program directors include the following: lack of immediate termination information needed to delete employees from payroll-deduction procedures; difficulty in tracking work locations; logistical and scheduling problems; inadequate staff support—both clerical and backup drivers; incapacity in the face of rapid program growth; driver errors on expense reports and other forms;

Exhibit 12: Preventive Maintenance Checklist

With proper preventive maintenance you can avoid major mechanical problems and unnecessary bills, which will help keep the costs and fares down. In performing routine maintenance the best guide to follow is the owner's manual. The following is a list of items that need to be performed at every 5,000, 10,000 and 20,000 mile interval.

	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	65,000	70,000	75,000	80,000	85,000	90,000	95,000
Change Oil and Filter	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lubricate Chassis	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rotate Tires	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Inspect Fluid Levels:																			
Power Steering	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Transmission	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rear Axle	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brake Master Cylinder	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Check and Service Cooling System		X		X		X		X		X		X		X		X		X	
Apply Solvent To:																			
Carburetor Choke Shaft and Fast Idle Cam and Pivot Pin		X		X		X		X		X		X		X		X		X	
Replace Air and Fuel Filters				X				X				X				X			
Analyze Firing System																			
Apply Solvent To: Manifold Heat Control Valve				X				X				X				X			
Check Crankcase Inlet Air Cleaner				X				X				X				X			
Service Transmission				X				X				X				X			
Inspect, Clean, and Lubricate Front Wheel Bearings				X				X				X				X			
Check U-Joints				X				X				X				X			

employee turnover; coordination of departments (i.e., middle-management problems); difficulty in matching employees due to personal preference; and poor general communication.

Other problems encountered in administering the programs include: obtaining top-management support (which may indicate a need for more effective communication to the CEO on benefits and costs of the program); regulatory or legislative difficulties, such as the absence of a clear ridesharing law or guidelines; objections from commercial carriers such as taxi fleets and private buses; objections from mass-transit authorities; and, surprisingly, one case of an objection from a commercial third-party vanpool operator!

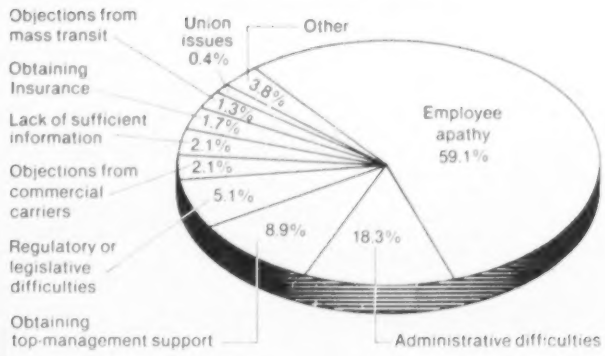
Recommendations for Changes in Public Policy

Perhaps because of the relatively recent starting dates for most corporate transportation programs, few respondents offered recommendations for public-policy changes. Of those who did comment, most focused on the issues of government taxation at both state and federal levels, and on workers' compensation.

Concerning state-tax policy, recommendations called for either an elimination or a reduction in state property, excise and sales taxes for ridesharing vehicles and fuel. Alternatively, tax rebates or credits were suggested. One company felt that employers should receive tax credits because the corporate transportation programs assist "core city residents" in gaining access to employment.

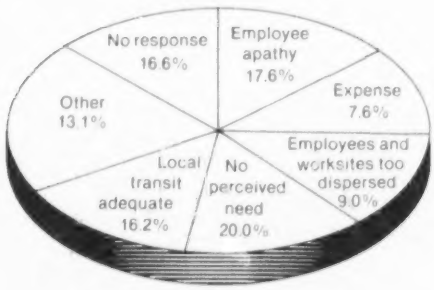
On both the federal and state levels, it was recommended that neither transit subsidies nor fare retention by pool drivers be counted as income, and that vanpool fares should be tax deductible. Respondents also sought a change in the Energy Tax Act of 1978, which allows a 10 percent investment tax credit only for ridesharing vehicles that use 80 percent of the mileage for actual com-

Chart 6: Common Problems Encountered in Establishing or Operating the Programs*



*Percentages do not add to 100 due to rounding.

Chart 7: Reasons for Refusal to Establish Program*
(290 Companies Reporting)



*Percentages do not add to 100 due to rounding.

muting.[21] In firms that offer drivers an incentive of using more than 20 percent mileage for personal or non-commuting use, the tax credit is jeopardized. Some also called for an increase in the size of the credit itself.

The major problem with workers' compensation insurance concerned lack of clarity as to whether ridesharing employees were covered in the event of vehicular accidents. Beyond calling for clear guidelines by the regulatory agencies, most respondents felt that workers' compensation should not apply, since coverage would serve as a disincentive to corporate ridesharing. One firm did want the coverage, and another suggested that the law should be changed to facilitate multiemployer ridesharing.

Similar concerns were expressed over insurance and corporate liability. Legislation was called for to allow insurance companies to spread the risk on ridesharing vehicles.

[21]Energy Tax Act of 1978, 92 Stat 3193, 26 USC 46.

Community Awareness

The Urban Mass Transportation Administration has awarded numerous demonstration grants to localities undertaking innovative transportation projects, including community-ridesharing methods. In an effort to find out how familiar corporate administrators were with paratransit programs—either government or corporate sponsored—in their vicinities, The Conference Board asked respondents the following question: "Are you aware of a ridesharing program in your community?"

Of the 235 firms now operating programs, 186 said they were aware, 25 said they were not, and 24 did not respond. Of the 290 firms that do not have programs, 139 said they were aware, 116 said they were not, and 35 did not reply.

Other recommendations included: establishment of ridesharing parking lots—or authorization of sections of existing large lots (such as those owned by supermarkets)—for ridesharing vehicles; reduced parking-lot requirements for new corporate buildings; vanpool use of bus lanes and tunnel approaches; additional high-occupancy-vehicle (HOV) lanes on highways; low interest loans or other government assistance to ridesharing; allowing self-insured companies to take on outside (nonemployee) riders; and increased government support for traditional mass transit.

One corporate expert, who has presented numerous workshops on transportation programs, offered the following recommendations to corporations, local development authorities, urban planners, and transit operators:

- "Ridesharing works best with corporate support, although it is not necessary that employers operate their own programs; they should be encouraged to offer donations of cash and in-kind services to support ridesharing for the good of the community, not for ridesharing's sake.
- "Personnel departments should be encouraged to consider ridesharing services as employee benefits that are more cost effective than most.
- "Economic development entities should be encouraged to view ridesharing in terms of the many benefits it offers industry and business, as well as the community.
- "New developers creating traffic attractors should be required to develop ridesharing and transit plans. Cost of preparation could be tax creditable.
- "Planners should be urged to consider ridesharing as a primary alternative to building highways and parking garages, and as a major component of public transportation and land use planning.
- "Transit operators need to understand the value and necessity of including ridesharing in their operations to provide cost-effective, balanced transit."

Appendix

Publications

How Ridesharing Can Help Your Company: A Manual for Employers, 1980. U.S. Department of Transportation, Washington, D.C. 20590

Vanpooling for Profit: A Business Opportunity, Linda Shuck and Barry Welsh, 1982. Alliance to Save Energy, 1925 K Street N.W., Suite 507, Washington, D.C. 20006

Vanpooling: An Update, Lew Pratsch, 1979. U.S. Department of Energy, U.S. Supt. of Documents, Washington, D.C. 20402

Resources

National Ridesharing Information Center
Room 4432
Federal Highway Administration
Washington, D. C. 20590
(202) 426-2943
(800) 424-9184 Toll Free

National Association of Van Pool Operators
12208 W. Kingsgate Drive
Knoxville, Tennessee 37922
(615) 966-4507

Research Bulletin

Executive Incentives: Long-Term Performance Share/Unit Plans

by Harland Fox
Senior Research Associate

The Conference Board

umber 132

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Until a decade ago, a rational operating assumption of senior corporate executives was that a good, steady increase in company earnings would be accompanied by a good, steady increase in the price of the company's stock. Therefore, the stock option was an effective way to reward top executives for the long-term performance of the company.

But this basic assumption on which stock options were based collapsed during the 1970's. In many companies there was a good, steady increase in earnings but company stock prices remained static or declined. Stock options became worthless at worst and, at best, did not seem to reflect company performance properly.

Early in the 1970's, a few companies installed a plan for top executives that was designed to correct this situation. In place of stock options, senior executives were contingently given a specified number of shares of company stock. At the same time, long-term performance goals were set, usually in terms of earnings per share growth over a period of the next three to five years. Depending on how close to the performance targets they came, participating executives received all, some or none of the shares at the end of the performance period. This device is now commonly known as a "long-term performance *share* plan."

There is, however, an underlying difficulty with these plans in which shares of stock are the award unit: The value of a share may increase or decrease appreciably over the three- to five-year company performance period. If the stock price falls, the final value of awards will be less than planned, even if the corporate performance targets are met or exceeded. On the other hand, if the price of stock increases appreciably, participating executives will receive a windfall even if they meet only the minimum company performance goals.

Perhaps more important, the initial market value of a stock award, as well as any appreciation over the performance period, is a charge to company earnings. Therefore, companies face an open-end cost for the plan. One solution to the possibility of stock price appreciation is to put a cap on the appreciation allowed for plan computations. For example, among the 27 performance share plans described here, 15 set a maximum on the allowed increase in the value of a share over the market price at the time of the contingent award. An increase of 200 percent (six plans) and 300 percent (four plans) are most common; the other five plans set a cap of 120, 140, 175, 180, and 250 percent, respectively.

A more general solution to the problem of an award unit whose value might vary over the course of the performance period was the adoption of what are now generally labeled, "long-term performance *unit* plans." Under these plans, the contingent award at the beginning of a performance period is made in units with a *fixed value* that does not change during the performance period. Thus, the only thing that determines the final value of an award is how close plan participants come to performance targets. To put this another way, an important result of adopting the *unit* plan is to completely sever the size of the payout from the performance of company stock over the relevant period. Under the performance *share* plan, the value of the payout is at least partially affected by the price of company stock.

The performance *unit* plan is by far the most common arrangement at present. For example, among the 89 plans analyzed here, 59 (two-thirds) are performance *unit* plans, 27 are performance *share* plans, and the rest make awards partially in shares and partially in units. In one of the three plans in which both shares and units are awarded, the combination is essentially a function of the company performance measure used. The performance measure is a comparison of the company's profitability and earnings growth with that of ten competitors. If the company meets its goals relative to competition, executives are assured of one-half of the value of the initial award through the performance *units*. However, if the price of company stock falls during the performance period, the share unit values drop and the executives are penalized along with the stockholders. In the other two companies that grant both shares and units, the units are essentially an *added* grant to pay the tax on a restricted stock award.

Growth of Plans

The first long-term performance share/unit plans were adopted by about a dozen major companies in 1971 and 1972.[1] By the Spring of 1974, about 8 percent of the manufacturers among the *Fortune* 1,000 industrials had a plan; this had increased to approximately 32 percent by the Spring of 1982.[2],[3] The growth rate was much higher among larger manufacturers, however. By 1982, approximately 51 percent of those with sales of $2 billion or more had a plan compared with 31 percent of those with sales of $400 million to $2 billion, and 16 percent of those with sales of $100 million to $400 million.[4]

The growth of these plans has not been as great in nonmanufacturing industries. For example, in the Spring of 1982, 13 to 17 percent of a sample of retailers, com-

[1]Laurence C. Bickford, "Long-term Incentives for Management, Part 6; Performance Attainment Plans," *Compensation Review*, Third Quarter, 1981, p. 18.

[2]Harland Fox, *Top Executive Compensation (1974 Edition)*. The Conference Board, Report No. 640, 1974, p. 10.

[3]*Top Executive Compensation (1982 Edition)*. The Conference Board, Report No. 793, 1980, p. 14.

[4]*Top Executive Compensation (1982 Edition)*, Ibid.

mercial banks, insurance companies, and construction firms had a plan.[5]

Relationship to Nonqualified Stock Options[6]

As already noted, in the early development of long-term performance share/unit plans, awards were considered a substitute for stock option awards. A sizable minority of companies still continue this practice: In 37 percent (33) of the 89 plans studied here, participants in the performance share/unit plan do not receive stock options. Most (23) of these companies dropped their stock option plan when the performance plan was adopted. The other ten companies have a nonqualified stock option plan, but do not grant options to participants in the performance share/unit plan. This practice of no nonqualified stock options for performance plan participants is much more common among performance *share* plans than among performance *unit* plans.

- Among the 30 performance *share* plans, 63 percent (19) do not grant nonqualified stock options to plan participants.[7] That is, twelve have no stock option plan; seven have a plan but do not grant options to performance share plan participants.
- Among the 59 performance unit plans, only 24 percent (14) do not grant stock options to plan participants. Eleven companies have no stock option plan; the other three have a plan but do not grant options to performance unit plan participants.

Another small group of 12 performance *unit* plans use the "tandem" device to prevent participants from simultaneously benefiting from performance unit awards and stock option grants. In these companies, nonqualified options are granted "in tandem" with performance units; the exercise or payment of one cancels the right to the other. For example, in one company, performance units equal in total value to stock options are granted; at the end of the performance period, the participant receives either the units or the options, whichever are most valuable.

In the remaining 49 percent (44) of the companies, participants in the performance share/unit plan also receive nonqualified stock options. However, in more than half (23) of these plans, the company indicates that "the size of the stock option grants is smaller than would be the case if performance awards had not been granted."

Who Participates

In most companies, participation in the performance share/unit plan is limited to a relatively small group of senior executives. One reason for this limited eligibility is the nature of the performance goals specified by the plans; only the very top executives could be expected to have an obvious impact on corporate financial performance over a three- to five-year period.

Probably more important is the cost of the plan. Payments made under these plans are a compensation expense, a charge against earnings. The cost factor is further highlighted because the other major long-term incentive is the stock option for which there is no compensation expense (unless stock appreciation rights are granted).

Among the 89 plans studied here, the median number of participants is 40, with the middle half of the plans ranging between 20 and 73 participants.

The tabulation below shows the general distribution of participants in the plans.

Number of Participants	*Plans*	
	Number	*Percent*
Less than 20	20	22%
20 - 29.	12	13
30 - 39.	12	13
40 - 59.	12	13
60 - 99.	15	17
100 - 199.	9	11
200 and over	9	11
Total.	89	100%

The number of participants tends to increase with company size. For example, among the companies with fewer than 10,000 employees, the median number of participants is 22 executives, with the middle half ranging between 17 and 41. But, for the companies with 10,000 or more employees, the median number of participants is 58, with the middle half of plans reporting 26 to 106 participants.

The executives covered by the plans are relatively highly paid, of course. For example, the median salary of the *lowest paid* participant is $62,000, with the middle half ranging between $50,000 and $81,000. Among the companies with fewer than 30,000 employees, the median is $56,000, with the middle half from $40,000 to $66,000. But the median is $75,000 in companies with 30,000 or more employees, with the middle half ranging from $56,000 to $100,000.

[5] *Top Executive Compensation (1982 Edition)*, p. 6.

[6] Information for this report was obtained before the general adoption of the new "incentive stock options," which first became effective in August, 1981. These new stock options have no particular characteristic that would be likely to change the relationships to stock options noted here.

[7] This includes the three plans that grant *both* shares and units.

The executive group covered by these plans is a relatively small proportion of the total *exempt* population in the company. For example, in about half (44) of the 89 companies, participants represent less than 1 percent of all exempt employees. In most (34) of the other plans, they represent 1 percent to 5 percent of the exempt population. Only 11 plans include 5 percent or more of the exempt group.

All but six of the companies have an *annual* bonus or incentive plan that also covers executives in the performance share/unit plan. Coverage in the long-term plan is much more restricted, however. On the average, only the top 21 percent of the bonus group is eligible for long-term performance awards; the middle half of the companies cover from 10 percent to 38 percent of the annual bonus eligibles.

Similarly, among the 56 companies in which performance share/unit plan participants also are eligible for stock options, these participants are a much smaller group than the stock option eligibles. On the average, only the top 22 percent of the stock option group is eligible for the long-term performance awards. However, almost 31 percent of plans cover essentially the same group as the stock option; about half of these plans grant performance awards in tandem with stock options.

The Performance Period

A key feature of the long-term performance plan is, by definition, the "performance period"—that is, the number of years over which corporate performance will be measured to determine the amount of award payout.

As Table 1 indicates, the performance period is three or four years or, somewhat less commonly, five years. Certainly the choice of the length of the performance period depends basically on the ability to quantify and forecast business performance over the period. At the same time, a performance period of less than three years is apparently too short a focus to be considered long term; the plan might then be viewed as a variation on the annual bonus plan. Similarly, if the performance period is too long (apparently more than five years), the plan may lose its incentive impact because of the wide gap between reward and performance.

Ten of the plans have changed the length of the performance period since the plan's inception. Six of them have shortened the length of the performance period: from five years to three years (three plans); from five to four years (two plans); and, in one plan, from nine to three years. The other four plans have extended the performance period: to three years from two; to four years from three; to four years from two; and to five years from three years.

As a general rule, the companies do not give a contingent award at the beginning of the performance period

Table 1: The Performance Period and Frequency of Grants

Frequency of Grants	*Total Plans*		*The Performance Period*		
	Number	*Percent*	*3 years*	*4 years*	*5 years*
Annual	51	57%	30	10	11
Every 2 years	30	34	4	20	6
Every 3 years	3	3	3	—	—
Every 4 years	3	3	—	3	—
Every 5 years	2	2	—	—	2
Total	89	100%[a]	37(42%)	33(37%)	19(21%)

[a]Details do not add to 100 because of rounding.

and then wait until the performance period ends before starting a new performance period (that is, before making another award). As Table 1 indicates, only eight plans do this. The other 81 plans have overlapping performance periods. The most common arrangement (30 plans) is to start a new three-year performance period each year by using annual awards. Other plans also use annual awards but the performance period is either four (ten plans) or five years (eleven plans). Another thirty plans start a new performance period every two years; in most cases (twenty plans), the performance period is four years.

The primary purpose of overlapping performance periods is to prevent one bad year early in the period from erasing the possibility of reward over the remaining years of the period; overlapping performance periods recreate incentive periodically. By the same token, it is obvious that one disastrous year can affect more than one overlapping performance period.

By starting a new performance period every one or two years, the company also has the opportunity to set new performance targets periodically. In addition, newly eligible executives can be added to the program more frequently (or poor performers dropped). Overlapping performance periods also may help to retain executives; portions of one or more awards are always outstanding and forfeitable.

Corporate Performance Standards

The coupling of financial rewards for participants to some measure of corporate long-term financial performance is the very essence of these performance share/unit plans. Corporate financial performance is evaluated by two basic types of standards.

In 25 percent (22) of the plans, the performance standard is *external,* based on company performance *relative* to some other group of companies. For example,

here is the way one of these plans defines the performance standard:

> "One hundred percent of the contingent cash value of the performance units shall be earned if the company's cumulative EPS (earnings per share) growth rate for the performance period is at least at the 75th percentile of the cumulative EPS growth rates for the comparison corporations for such performance period. Fifty percent of such contingent cash value shall be earned if such cumulative EPS growth rate of the company is at the 50th percentile for the comparison corporations. If the company's percentile rank is between the 50th and 75th percentiles for the comparison corporations, a pro rata portion between 50 and 100 percent of such contingent cash value shall be earned.
>
> "No amount shall be earned at the end of a performance period with respect to any performance unit if (1) the company's cumulative EPS growth rate for such performance periods is below the 50th percentile of the cumulative EPS growth rates for the comparison corporations; and (2) the company does not achieve at least the average return on shareholders' equity designated by the committee at the time the performance period is established."

In addition to measuring company performance relative to the performance of a group of peers, the company above also uses an *internal* yardstick. That is, the company must achieve a specified return on stockholders' equity no matter how well it does relative to the comparison group (four other plans have this dual yardstick arrangement).

In three-fourths (67) of the plans *only* an internal standard is used to evaluate company performance. For example, a typical internal target might be:

> "No payment under this program will be made if company performance falls below a level of 7 percent compounded annual earnings per common share during the performance period. Compound growth rate for the performance period shall be computed using as a base the earnings per common share for the fiscal year immediately preceding the performance period."

As a rule, earnings per share is the most common standard by which corporate performance is judged. As the tabulation below illustrates, 79 percent (70) of the plans use EPS, either as the sole standard (55 plans) or in conjunction with other measures (15 plans).

Among the 34 plans that use some other measure of corporate performance than EPS, the most common are return on stockholders' equity (12 plans) and return on total capital (12 plans). Return on assets (four plans), change in absolute profits (four plans), and increases in book value (two plans) are also used.

In those plans that use EPS growth, the targets are typically expressed in terms of a cumulative compound growth rate. For example, if the EPS for the base period is $1.00 per share and the target is 10 percent compound growth over a three-year performance period, total earnings of $3.64 per share would be needed ($1.10+$1.21+$1.33). To meet the target, however, the earnings could be produced in any pattern; for example, $1.33+$1.21+$1.10.

As a rule, EPS targets consist of a range; that is, there is a minimum growth rate below which no payments are made; a normal or par; a maximum target payoff. Table 2 shows these EPS targets for 36 of the 50 plans that use EPS to define an *internal* performance standard. For par performance the median is 12.5 percent annual cumulative earnings increase. The median minimum target is 8 percent, and the median maximum target is 15 percent.

The base from which the EPS target is calculated usually is earnings in the year just prior to the performance period: 24 of 44 of the above plans use this base. Another eleven use the average of the two prior years, seven use the three prior years, and two use an average of the four years prior to the performance period.

Size of the Initial Award

As a rule, the value of the awards at the beginning of a performance period are the measure of the expected payoff if the participant group hits the *par* company performance target; the minimum and maximum payments are generally set as a function of the initial award.

	Total Plans		*Internal Standard*		*Relative Standard*	
Performance Measure	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Only earnings per share . . .	55	62%	44	66%	11	50%
Earnings per share *plus* other measure	15	17	6	9	9	41
Not earnings per share; only other measures	19	21	17	25	2	9
Total	89	100%	67	100%	22	100%

Table 2: EPS Growth Rate Targets, 36 plans

Compound Annual Increase in EPS	For Minimum Payment	For Par Payment	For Maximum Payment
25%	—	—	1%
20	—	1%	4
19	—	—	1
18	—	—	2
17	—	—	3
16	—	—	3
15	2%	9	4
14	—	3	3
13-13.9	—	4	2
12-12.9	3	7	5
11	2	2	1
10	5	4	5
9	2	1	—
8-8.9	6	3	1
7-7.9	6	1	—
6	6	—	—
5	2	1	1
4	1	—	—
3.5	1	—	—
Median	8%	12.5%	15%

Companies were asked to indicate the value of initial awards as a multiple of base salary for the highest paid, the lowest paid, and the "average" paid participant for the most recent award year (usually 1980 or 1981). For the 209 executives for whom data were obtained from 71 companies, the median value of the intial award was the equivalent of 55 percent of base salary, with the middle half of the awards ranging between 35 percent and 100 percent of salary. As might be expected, the median award of 77 percent of salary for the highest paid recipient (typically the chief executive officer) is significantly higher than the median award for the average (50 percent of salary) and the lowest paid recipient (40 percent).

The size of the award depends on the frequency with which grants are made. As a comparison of Tables 3 and 4 indicates, the median grant for those plans that start a new performance period every two years is almost twice as large as the median grant for the plans that make annual grants. For example, for the chief executive officers (highest paid), the median grant for plans with annual grants is 60 percent of salary, compared with 100 percent of salary under plans with biennial grants.

The size of the initial award is also related to the length of the performance period. For example, the median award for the highest paid recipients in plans with *annual* grants and a three-year performance period (56 percent of the plans in Table 3) is 50 percent of pay compared with 150 percent of pay for highest paid recipients in plans with *biennial* grants and a *four*-year performance period (67 percent of the plans in Table 4). It is assumed here that this difference is mostly due to the difference in frequency of grant; among the plans with annual grants, the median award of 60 percent of pay in eighteen plans with a four- or five-year performance period is only slightly higher than the 50 percent median in the twenty-three plans with annual grants and a *three*-year performance period. (There were not enough biennial grant plans with five-year performance periods to compare with the four-year performance period plans.)

The size of the initial award as a percentage of salary also is related to salary level, as the tabulation below suggests.

Although the number of cases is small, biennial grants tend to be almost twice as large as annual grants at each salary level.

Value of Final Payouts

In addition to information about the value of awards at the beginning of the performance period, companies were asked to indicate, for the most recent year in which awards have actually been paid, the value of the award (as a multiple of base salary) for the highest paid recipient, the lowest paid, and the "average" paid recipient.

For the 103 executives for whom data were obtained from 35 companies, the median value of payments was the equivalent of 43 percent of base salary, with the middle half ranging between 19 percent and 81 percent of base salary.[8] This can be compared with payments reported for the five highest paid executives in 58 companies that made payments during 1979 and in 81 companies that made payments during 1981. In one study, the median for 265 executives was the equivalent

[8]In most of the other 54 companies no performance period has yet matured.

	Annual Grants		*Biennial Grants*	
Salary Level	*Executives*	*Median Award*	*Executives*	*Median Award*
$300,000 and over . . .	21	69%	14	135%
200,000-299,999 . . .	14	55	7	90
100,000-199,999 . . .	28	40	25	69
Less than $100,000 . .	55	30%	33	59%

Table 3: Size of Initial Awards for Plans with Annual Grants

Size of Initial Award Percent of Salary	Highest Paid Recipient		Average Paid Recipient		Lowest Paid Recipient	
	Number	Percent	Number	Percent	Number	Percent
175-200%	1	2%	—	—	—	—
150-174	1	2	—	—	—	—
125-149	2	5	1	3%	—	—
100-124	5	12	—	—	1	2%
75-99	4	10	5	14	2	5
50-74	15	37	7	19	9	22
25-49	10	25	18	50	12	29
Less than 25%	3	7	5	14	17	42
Total	41	100%	36	100%	41	100%
Median Award	60%		36%		30%	
Mid-50% Range	46-84%		29-60%		17-53%	
Median Salary	$300,000		$96,000		$62,000	
Mid-50% Range	$249,000-$355,000		$80,000-$112,000		$53,000-$74,000	

Table 4: Size of Initial Awards for Plans with Biennial Grants

Size of Initial Award Percent of Salary	Highest Paid Recipient		Average Paid Recipient		Lowest Paid Recipient	
	Number	Percent	Number	Percent	Number	Percent
300% and over	2	7%	—	—	—	—
200-299	4	15	1	4%	—	—
150-199	4	15	6	23	2	7%
125-149	2	7	—	—	2	7
100-124	4	15	2	8	3	12
75-79	5	19	2	8	2	7
50-74	5	19	11	41	9	33
25-49	1	3	3	12	5	19
Less than 25%	—	—	1	4	4	15
Total	27	100%	26	100%	27	100%
Median Award	100%		70%		56%	
Mid-50% Range	80-190%		50-150%		35-100%	
Median Salary	$300,000		$100,000		$60,000	
Mid-50% Range	$190,000-$375,000		$75,000-$120,000		$43,000-$85,000	

of 34 percent of 1979 salary, with the middle half ranging between 17 percent and 63 percent of salary.[9] In the other case the median payment for 392 executives was 39 percent of 1981 salary with the middle 50 percent ranging between 20 and 70 percent of salary.[10]

The value of payments is related to the frequency of grants. That is, in those plans in which there will be a payment every year (assuming the performance targets are met each year), the median award for 59 executives is 25 percent of base pay, with the middle half ranging between 11 percent and 60 percent. The median is 60 percent, with a mid-50 percent range of 36 percent to 105 percent of base pay for the 39 executives who received payments from a plan in which a performance period ends every two years. (Again, the length of the performance period probably has an influence on the size of payments, but data are not adequate to explore this).

As Table 5 suggests, the median size of payments as a percent of salary tends to increase as salary increases. This is true for plans with annual awards and for plans with biennial awards, but data are not adequate to measure the magnitude of these differences.

[9] *Top Executive Compensation (1980 Edition).* The Conference Board, Report No. 793, 1980, p. 5.

[10] *Top Executive Compensation (1981 Edition).* The Conference Board, Report No. 827, 1982, p. 6.

Table 5: Amount of Payouts

Amount of Payout	*Highest Paid Recipient*		*Average Paid Recipient*		*Lowest Paid Recipient*		*Total Recipients*
Percent of Base Salary	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*
150% and over	6	17%	2	6%	—	—	8
100-149	5	14	3	9	4	11%	12
90-99	—	—	—	—	1	3	1
80-89	4	11	1	3	—	—	5
70-79	—	—	2	6	1	3	3
60-69	4	11	5	15	3	9	12
50-59	1	3	1	3	2	6	4
40-49	4	11	3	9	2	6	9
30-39	2	6	7	21	4	11	13
20-29	5	14	1	3	5	14	11
10-19	2	6	6	18	6	17	14
Less than 10%	2	6	2	6	7	20	11
Total	35	100%[a]	33	100%[a]	35	100%[a]	103
Median Payment	62%		40%		28%		43%
Mid-50% Range	25-102%		20-70%		10-60%		19-81%
Median Salary	$300,000		$102,000		$60,000		$110,000
Mid-50% Range	$250,000-$375,000		$77,000-$130,000		$50,000-$82,000		$66,000-$225,000

[a] Details do not add to 100 because of rounding.

About the Companies

In the Spring of 1980, The Conference Board obtained information from approximately 1,200 companies about their executive compensation programs, including the presence of a long-term performance share/unit plan.[1] These 1,200 companies included a sample of:

- manufacturers from the *Fortune* 1,000 industrials,
- commercial banks from those with $100 million or more in total deposits,
- insurance companies from those with $10 million or more in premium income,
- retailers from those with 1,000 or more employees,
- construction companies from among the 400 largest.

In late 1981, all companies in the above groups that had a performance share/unit plan were asked to participate in this study. The total number with a plan and the number that provided data are shown below:

Type of Business	Total With Plan	Participants Number	Participants Percent
Manufacturing	121	70	58%
Commercial banks	22	8	36
Insurance	14	6	43
Retail	10	3	30
Construction	6	2	33
Total	173	89	51%

The size of the 89 companies that provided data is summarized below in terms of the total number of U.S. employees.

Number of U.S. Employees	Total Companies	Manufacturers	Nonmanufacturers
60,000 and over	13	10	3
50,000-59,999	7	7	—
40,000-49,999	8	8	—
30,000-39,999	6	5	1
20,000-29,999	12	11	1
10,000-19,999	12	8	4
5,000-9,999	11	10	1
Less than 5,000	20	11	9
Total	89	70	19

For the group as a whole, median U.S. employment is 23,000, with the middle 50 percent ranging between 6,600 and 44,000. The manufacturers are considerably larger than the nonmanufacturers. The median manufacturer employs 23,000 compared with 6,200 for nonmanufacturers.

A partial list of participating companies is shown below; 12 companies preferred not to be identified.

Air Products and Chemicals, Inc.
Akzona Incorporated
Albany International
Atlantic Richfield Company
Bandag, Incorporated
Bank of America
Bemis Company, Inc.
Black and Decker Manufacturing Co.
Block Drug Company, Inc.
Boise Cascade Corporation
Borden Inc.
Bristol-Myers Company
Burlington Industries, Inc.
Carlisle Corporation
Champion International Corporation
Connecticut Mutual Life Insurance Company
Continental Group, Inc.
Control Data Corporation
Corning Glass Works
Crown Zellerbach
Emerson Electric Company
Esmark, Inc.
Esterline Corporation
Federal Paper Board Company, Inc.
Fidelity Union Bancorporation
Fieldcrest Mills, Inc.
First American Bank of Nashville, N.A.
First Interstate Bancorp
FMC Corporation
Gannett Company, Inc.
GEICO
General Electric Company
General Mills, Inc.
H. J. Heinz Company
Honeywell Inc.
Horizon Bancorp
International Harvester
International Minerals & Chemical Corporation
ITT
Life Insurance Company of North America
LTV Corporation
McGraw-Hill, Inc.
3M Company
Mobil Oil Corporation
Monsanto Company
Nalco Chemical Company

Nashua Corporation
National Old Line Insurance Company
National Steel Corporation
National Tea Company
N.L. Industries, Inc.
Owens-Illinois, Inc.
J. C. Penney Company, Inc.
Perini Corporation
Philips Petroleum Company
Pillsbury Company
PPG Industries, Inc.
Quaker Oats Company
Ranco Incorporated
Raymond International Inc.
R. J. Reynolds Industries, Inc.
Sanders Associates, Inc.
Scientific-Atlanta, Inc.
Sealed Power Corporation
Sears, Roebuck and Company
Shell Oil Company
Standard Oil Company of California
Texas Instruments
Thiokol Corporation
Union Oil Company of California
U.S. Bancorp
U.S. Industries, Inc.
U.S. Trust
United Technologies Corporation
Westinghouse Electric Corporation
Xerox Corporation
Zions First National Bank

[1]Harland Fox, *Top Executive Compensation, 1980 Edition*. The Conference Board, Report No. 793, 1980, p. 5.